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TITLE: Services to develop, standardize, and validate polymerase chain reaction (PCR) protocols for the detection of leishmaniasis in clinical samples

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## 1. Objectives

As set forth in the Statement of Work for contract DAMD17-92-C-2097 entitled "Services to develop, standardize, and validate polymerase chain reaction (PCR) protocols for the detection of Leishmaniasis in clinical samples", the objective of this study is comprised of two phases. In the first phase, the contractor shall "Develop and standardize the technology known as the polymerase chain reaction (PCR) for the detection of leishmaniasis in clinical samples". Phase II defines the task of the contractor to "Validate PCR testing protocols developed as a result of the first objective in a large select military population of approximately 2,500 to 3,000 individuals". The mid term report (October 20, 1993) described the development of a polymerase chain reaction (PCR) assay for the detection of leishmaniasis and testing of a limited number of clinical samples. This final report includes the summary of the previous report and the additional work carried out to optimize the PCR methods for Old World and New World species of *Leishmania* and testing of additional clinical samples from different geographic areas.

## 2. Introduction

Leishmaniasis, a very important zoonotic disease of humans in the developing countries, became a problem of considerable concern in the United States, following Operation Desert Storm (ODS) (1). The etiologic agent of leishmaniasis is a protozoan of the genus *Leishmania*. Members of the genus *Leishmania* are grouped broadly into the New World (*L. mexicana* and *L. braziliensis* complexes) and Old World (*L. donovani* and *L. tropica*) species. Four species and at least 15 subspecies are generally recognized. All are similar in morphology and life history. The parasites which infect humans are transmitted by the Old and New World sandflies, *Phlebotomus* and *Lutzomyia*, respectively. In the insect vector, the protozoan is found as the flagellated or promastigote form. Upon introduction into the human host, and if phagocytized by a macrophage, the parasite transforms into the non-flagellated, ovoid form, the amastigote.

Three major types of pathologies result from active infection with *Leishmania*. Cutaneous leishmaniasis is characterized by fairly localized cutaneous lesions. If the organism spreads from the site of infection to the nasal cavity and naso-pharyngeal region, the severely disfiguring mucocutaneous leishmaniasis can result. The most severe form of the disease occurs if the parasite metastasizes through the reticuloendothelial system, to infect the spleen, bone marrow, and other tissues. Visceral leishmaniasis, or Kala-azar, is frequently fatal, if untreated.

Increased travel between the industrialized countries of the West and the developing nations, by businessmen, military personnel and tourists, mandates the development of more appropriate tools for laboratory diagnosis of this potentially very serious disease. Effective drug treatments to control the infection are available, but a proper diagnosis is required before starting treatment. To apply laboratory diagnostic methods in developing nations,



simplified assay formats are desirable. A further reason to pursue development of nucleic acid based tests which are simplified and amenable to large scale screening is their potential for preventing the dissemination of these and similar parasitic infections through the blood donor pool.

For the purposes of this study, the primary interest is in Old World species, as these are the organisms native to the geographic region where ODS took place. The strains *L. tropica*, *L. major*, and *L. donovani* predominate in south west Asia, and are the 3 species against which most of the PCR primer sets described in this report were tested. When patient samples were used as positive controls, the majority of these were from geographic regions where *L. donovani* predominates. During the course of this contract, however, several New World and Old World species have also been examined, as well as patient samples from South and Central America, Africa and India.

## **2.1 Polymerase Chain Reaction (PCR) Assay**

The polymerase chain reaction (PCR) is *in vitro* DNA replication. Rather than the DNA double helix being unwound by replication-associated enzyme complexes, DNA is heat-denatured in the presence of a thermostable DNA dependent DNA polymerase, oligonucleotide primers complementary to target sequences to be amplified, and deoxynucleoside building blocks for DNA synthesis. Alternating cycles of denaturation, primer annealing (hybridization), and extension, result in the accumulation of double-stranded DNA fragments of discrete length, termed amplicons. This process operates under defined conditions and for a limited number of cycles as a quantitative exponential amplification of the target sequences. PCR thus results in a vast increase in copies of the target sequence and probably constitutes the most sensitive analytical technique currently available for molecular diagnostics,



being capable of detection of a single copy of nucleic acid per reaction.

### 2.1.1 Quality Control For PCR

SRA has more than 6 years experience using PCR in both a diagnostic and a developmental testing atmosphere, and is well versed in techniques required to minimize or eliminate the chances of contamination from different sources (2,3). Both physical and biochemical methods of avoiding cross contamination that SRA has followed in testing *Leishmania* specimens have been described in the mid-term report (October 20, 1993). In brief, these measures include, physical separation of pre- and post- amplification laboratories equipped with dedicated equipments, including certified Biosafety cabinets equipped with HEPA filters for all steps involving potentially infectious materials; strict QC of all reagents; single-use frozen aliquots of critical reagents; use of either positive displacement pipettors with single-use tips and pistons or special commercially-available pipet tips with an aerosol-barrier; proper use of positive and negative controls, hot start method for PCR and use of the enzyme uracil-N-glycosylase (uracil DNA glycosylase, UNG), in a method analogous to the excision repair system of living cells (4).

In this method, dUTP substitutes for dTTP in all PCR reactions, and UNG is included in all PCR reactions. Prior to temperature cycling, this moderately heat stable enzyme selectively excises uracil residues which have been incorporated into DNA during previous amplifications. During the initial heating step in PCR, the DNA backbone of any contaminating previously amplified material is broken at these apyrimidinic sites, thus preventing the U-containing DNA from serving as a template for polymerization. Since native DNA templates do not contain U residues and since Taq DNA polymerase efficiently incorporates dUTP as well as dTTP during PCR, this technique can be made to operate without decreasing sensitivity or specificity of PCR reactions. Pretreatment of all

PCR reactions eliminates the most common cause of a false positive result - carryover of amplified DNA from a previous amplification. SRA has incorporated this technique into PCR protocols for the amplification of HIV-1 and HTLV-I/II, as well as all PCR methods which have been used by us to amplify *Leishmania* sequences.

### **2.1.2 Design of an Appropriate Testing Algorithm**

In the course of conducting PCR testing prior to the advent of UNG-mediated carryover prevention, we found it necessary to design PCR testing algorithms to minimize the chance of false positive test results arising from PCR product contamination (5). Specifically, we have tested (and continue to test) all specimens as duplicate reactions plus a negative control spatially unique to the duplicate reaction set, with a primary primer set. Reaction products are subjected to hybridization analysis using an oligonucleotide probe to sequences bracketed by but not overlapping the primers. A result of "reactive" is then defined as the detection of specific hybridization signal in both duplicates, with no specific signal in the corresponding negative control reaction. The detection of specific hybrids in only one duplicate is defined as a result of "non-diagnostic," necessitating repeat testing. "Non-reactive" refers to the absence of specific signal in both duplicates, with low copy number positive controls being detected. In spite of the introduction of sophisticated biochemical methods for detection of product cross-contamination, the ever-present possibilities for operator error support the continued use of carefully-designed PCR testing algorithms.

### **2.1.3 Optimization of Reaction Parameters**

In addition to the techniques designed to eliminate contamination and resulting false positives, all PCR reactions are optimized for both specificity and product yield. These procedures include empirical determination of optimal oligonucleotide ratios and

concentrations, magnesium ion concentration, Taq polymerase concentration, and annealing temperature. Despite these precautions, some non-specific annealing of PCR primers does occur, even with single copy gene detection, and more so with the detection of retrovirus or parasite DNA in the presence of a high background of human genomic DNA. Since annealing of primers to template is not 100% specific under all conditions encountered during the course of a PCR reaction, it is necessary to adjust reaction conditions to maximize synthesis of specific product.

While post-PCR hybridization detection ensures that non-specific products will not be detected, the synthesis of these spurious amplicons affects the amplification process. Non-specific reaction products do incorporate PCR primers such that subsequent amplification cycles result in their specific amplification as "quasi-specific" templates. This detracts from the overall efficiency of the reaction, as both non-specific and specific products compete for primer and Taq binding. Careful adjustment of reactant concentrations to strike a balance between maximization of primer hybridization and minimization of non-specific annealing can significantly increase PCR product yield and also extend sensitivity into the < 10 copy range. In our experience, with some primer sets, rigorous optimization can extend the detection limit 2 to 3 orders of magnitude. SRA has pioneered the development of HPLC protocols for quantitation of PCR products (6). The analytical precision of HPLC analysis allows more precise determination of PCR product yield, with very fast turnaround, often allowing complete optimization of reaction conditions for a new primer set within two days.

At the start of this contract, HPLC was used to evaluate PCR reaction products. While it has the aforementioned advantages of precise quantitation, it does not have the sensitivity of our current microplate based capture assays. A basic protocol for

using the HPLC for PCR product detection is provided, in the Methods and Results section.

#### 2.1.4 Design of PCR Primers and Probes

Design of synthetic oligonucleotide primers and probes is facilitated by the use of computer software dedicated to that purpose (e.g., Oligo, National Biosciences; Primer Detective, Clontech). After candidate sequences are designed, these sequences are compared to DNA sequences of both related and unrelated organisms by computer homology searches from the Genbank database using the Lasergene DNASTar program running on a Macintosh IIci. These preliminary steps reduce the chance of PCR artifacts (primer-dimers) due to primers that share significant sequence homology, or secondary structure that would reduce the overall efficiency of the PCR amplification. In addition, with highly variable sequences or sequences which are only partially known (e.g., *Leishmania* minicircle kDNA), it has been suggested that PCR primers preferentially end in 3'-T, to minimize the effects of possible 3'-mismatch (7). Other strategies to lessen the effect of random non-homologies with the target sequence include the synthesis of primers with degenerate positions and/or inosine substitutions (8). However, excessive degeneracy should be avoided, in order to maintain specificity. We have exploited this latter technique in the design of some "second generation" primers that show improved detection of New World *Leishmania* strains in our testing.

In the case of *Leishmania*, almost 20 different PCR primer combinations have been evaluated to date. These include multiple sets that amplify sequences found in the kinetoplast (kDNA) minicircles, one set directed against sequences found in the kDNA maxicircles (equivalent to mitochondrial DNA), one set directed against ribosomal RNA sequences (rRNA), and one set specific for conserved sequences from one nuclear gene (DHFR). Finally, it should be noted that, even though primer and probe sequences have

been carefully chosen based on predicted homology to the desired sequences and the lack of homology to other (especially human) sequences in GenBank, it is still necessary to test these primers sets against actual specimens of related and unrelated organisms. This has been done for all primer sets that show acceptable sensitivity against the *Leishmania* strains of interest.

### **3. Methods and Results**

While there has been significant improvement in the sensitivity of the PCR detection protocol over the two year course of this contract, the basic elements of the procedure employed are common to many of the PCR protocols already in use by SRA. Sample preparation steps and the basic PCR protocols remain essentially unchanged from that described at the start of the contract, since they were validated previously. Similarly, the capture plate procedure for PCR product detection was developed for other applications and its adaptation to this use was governed solely by the design and implementation of *Leishmania*-specific probes. The PCR reaction and detection protocols are given in the following sections, along with a detailed discussion of results obtained with the various PCR primer sets tested to date.

#### **3.1 Sample Preparation**

The sensitivity of PCR permits the detection of the low level of parasites in the peripheral blood, at least during active infection. In many cases, however, peripheral blood samples from a given individual were negative, while splenic or bone marrow aspirates were positive by PCR. Although the major specimen type is whole blood, the protocol given below works equally well for bone marrow and splenic aspirates, as well as cutaneous lesion lavage specimens, thus simplifying the overall test.

We have successfully employed differential lysis for the selective removal of RBC's from blood and bone marrow samples prior to DNA extraction for PCR. This method is based on the specific RBC-lytic activity of saponin, and is quite simple, requiring only the use of a tabletop centrifuge. The blood is gently mixed with 0.3% saponin (Mallinckrodt) in slightly hypotonic saline and allowed to remain at ambient temperature for 5 minutes, during which time RBC's are lysed. Centrifugation recovers leukocytes, which are again washed with saponin to remove residual RBC's. Some specimens need to be washed more than 1-2 times depending upon the amount of contaminated RBC's lysed with saponin. The final cell pellet contained total leukocytes, and appeared to be free of inhibition to PCR, by either heme or the saponin itself. The cell pellet was then lysed by the addition of proteinase K, and, following heat inactivation of the proteinase K, the crude lysate was either used directly in diagnostic PCR reactions or stored frozen until the PCR reaction was set up.

### **3.1.1 Sample Preparation by Total Leukocyte Separation**

#### **1. For specimens received in LeukoPREP tubes**

- a. Centrifuge at 3000 rpm for 20 min. Pipet off the supernatant into a 50 mL polypropylene centrifuge tube
- b. Count cells using ZAP-OGLOBIN. (40  $\mu$ L specimen + 20 mL Isoton II + 5-6 drops ZAP-OGLOBIN)
- c. Add 20 mL of 0.1% saponin in 0.6% NaCl. Mix well by inversion. Maintain at room temperature 5 min.
- d. Centrifuge at 1500 rpm for 15 min. Decant the supernatant.

#### **2. Whole Blood specimens**

- a. Count cells using ZAP-OGLOBIN. (40  $\mu$ L specimen + 20 mL Isoton II + 5-6 drops ZAP-OGLOBIN)
- b. Add 10 volumes of 0.1% saponin in 0.6% NaCl. Mix well by inversion. Maintain at room temperature 5 min.

- c. Centrifuge 1500 rpm for 15 minutes. Decant the supernatant.
- d. Resuspend the pellet with 15 mL 0.1% saponin in 0.6% NaCl
- e. Centrifuge 1500 rpm for 15 minutes. Decant the supernatant.

### 3.1.2 Cell Lysis

1. Use the cell count taken at the beginning of this procedure and determine lysis buffer volume for  $30 \times 10^6$  cells/ mL. Add the determined volume of lysis buffer containing 2X proteinase K. Vortex briefly.
3. Incubate in a water bath at 55° C - 60° C. for 1 h. Vortex briefly. If a large number of cells are being lysed, it may be necessary to vortex several times during this hour or extend the incubation time.
4. Transfer lysate to 1.5 mL screw-cap microcentrifuge tube. Label tube with specimen number, date lysed, tech initials.

NOTE: Lysates prepared by this protocol should be labelled with an "S."

5. Heat-inactivate the proteinase K by keeping the tubes at 95° C for 15 min. in dry-bath.
6. Quench on ice. Store at -20° C in freezer boxes in pre-PCR lab.

### 3.1.3 PCR Cycling Conditions

1. Prepare lower layer PCR mix as follows:

H <sub>2</sub> O	10.9 $\mu$ l
10X buffer (Promega)	4.0 $\mu$ l
MgCl <sub>2</sub> (25 mM)	4.0 $\mu$ l
dNTP (AUCG)	16.0 $\mu$ l
UNG	0.1 $\mu$ l
JW11/B-JW12 (10 $\mu$ M each)	5.0 $\mu$ l
-----	
TOTAL	40.0 $\mu$ l



2. Prepare an upper layer PCR mix as follows:

H <sub>2</sub> O	7.9 $\mu$ l
10X buffer (Promega)	1.0 $\mu$ l
UNG	0.1 $\mu$ l
Taq polymerase	1.0 $\mu$ l
-----	
TOTAL	10.0 $\mu$ l

3. Aliquot 40  $\mu$ L of the lower mix to each tube.
4. Add one bead of ampliwx. Number tubes. Place in the heating block at 65° C for up to 5 minutes to melt the wax. Allow to cool.
5. Pipet 10  $\mu$ L of the upper mix in the tube.
6. Add 50  $\mu$ L of the appropriate specimen lysate to each tube. Do not add positive control template in the pre-PCR lab.
7. In the positive control lab add 50  $\mu$ L *Leishmania* lysate of known copy numbers (1, 10 and 100) to the appropriate PCR tubes.
8. Immediately carry the reactions to the cycler. Proofread the program before starting. Fill out cycler log book.

#### CYCLER CONDITIONS

-----  
PRIMERS JW 11/B-12 or JW 11i/B-12i  
-----

Time Delay file

94° C 5' 0"  
-----

Step Cycles

97° C 0'15"

55° C 1' 0"

72° C 1' 0"

CYCLES 10  
-----

- Step Cycles

92° C 0'15"

55° C 1' 0"

72° C 1' 0"

CYCLES 30  
-----

SOAK 72° C

NOTE: products be frozen immediately upon removal from the cyclor, unless they can be assayed within 1 h due to the presence of un-denatured UNG and it's ability to degrade PCR products at room temperature and 4° C over time.

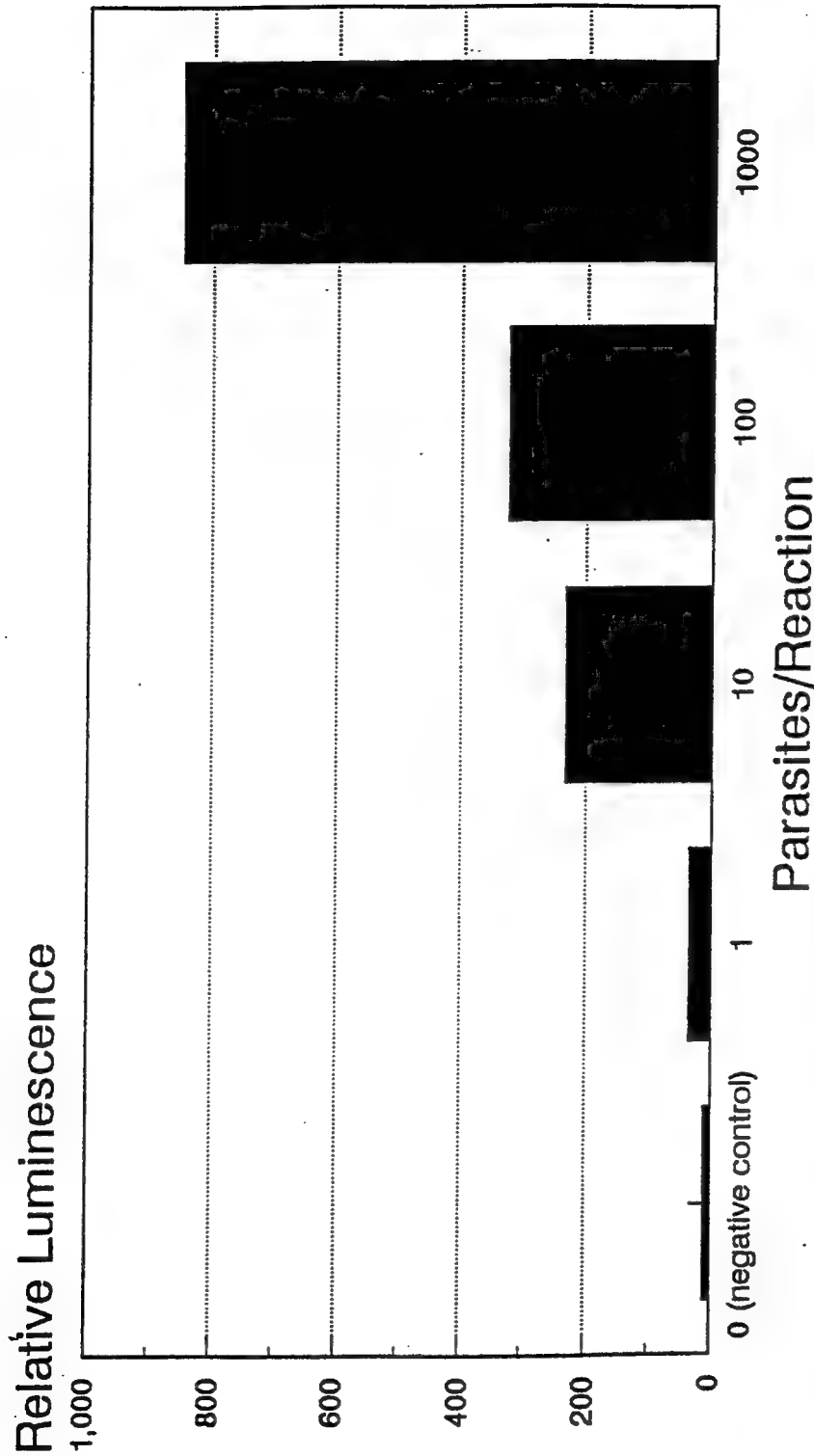
### **3.2 PCR Product Detection**

PCR products were analyzed using the affinity-based hybrid capture assay. We have used two slightly different detection systems with equivalent results. Earlier testings, utilized an Alkaline Phosphatase (AP) labeled specific oligonucleotide and a chemiluminescent substrate (Lumiphos) and later testings used the same oligo labeled with Horseradish Peroxidase (HRP) and a colorimetric substrate (OPD). The sensitivity obtained with either probe system is approximately equivalent. One distinct advantage with using and HRP probe is that the color produced from even 3 to 10 initial copies, after 40 cycles of amplification, is readily discernible by eye. Thus, it becomes possible to interpret results visually, by comparison with standards. Such an approach is acceptable for qualitative, though not quantitative, assays, and may be advantageous for application in developing nations. An example of the sensitivity of this system showing the detection of *L. tropica* by PCR using the AP-labeled probe and capture plate system is given in Figure 1.

#### **3.2.1 Capture Plate Procedure**

For simplicity, only the alkaline phosphatase (AP)-coupled protocol is described here. The primary differences include, obviously, use of a horseradish peroxidase (HRP) labeled oligonucleotide probe, OPD for colorimetric detection, and the use of clear rather than opaque plastic microwells in an ELISA-type plate reader rather than a luminometer. A diagram of the principles of operation of the capture plate is given in Figure 2.

Figure 1: Detection of *Leishmania tropica* minicircle DNA by PCR



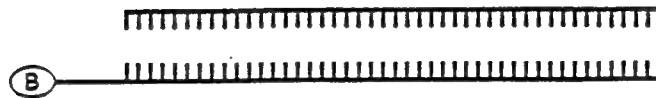
Dilutions of total DNA extracted from *L. tropica* promastigotes were prepared to correspond to the indicated numbers of parasites per reaction. Amplification was performed for 40 cycles using primers designed to amplify Old World *Leishmania*, and designated as sequences JW11 (5'-CCTATTACACCAACCCMAGTTT, where M denotes a mixed base position: C,T) and JW12 (5'-CGGGTAGGGCGTTCTCGGAAAT, where M denotes A,T). Specific detection of the amplified sequences by alkaline phosphatase-labelled JW14 (5'-ATTGAACGGGGTTTCTGTATGCATTTTCGAA) was performed in a 96 well plate, with chemiluminescent detection.

**Figure 2: Capture Plate PCR Product Analysis**

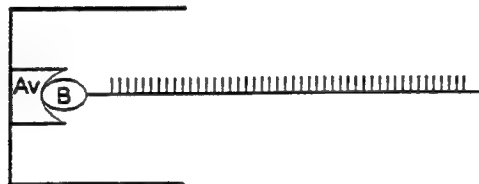
- ① PCR reaction is run using 1 biotinylated primer  
Specific product is produced



- ② PCR products are denatured by heating



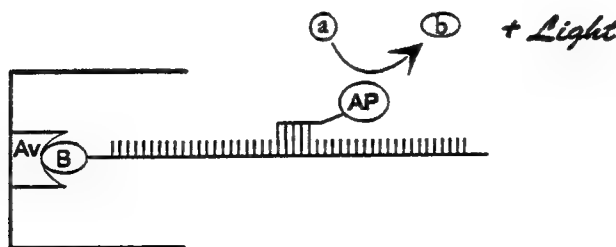
- ③ The biotinylated strand is captured in an avidin-coated microplate well



- ④ A specific synthetic oligonucleotide coupled to Alkaline Phosphatase (AP) is allowed to hybridize to the bound PCR product



- ⑤ A chemiluminescent substrate is added. The breakdown of this substrate produces light, which is detected by a microplate luminometer



1. Prepare an avidin-coated and blocked microwell plate according to the following procedure.
  - a. Pipet 120  $\mu$ l of 100 g/ml avidin D (Vector Labs) into each well of a high-binding plate (e.g., MaxiSorp, Nunc; Immulon 4, Dynatech). Incubate overnight at ambient temperature.
  - b. Remove the solution, and wash 4 times with Wash Buffer (1% Tween 20 in PBS).
  - c. Pipet 200  $\mu$ l of 1% casein (Hammarstein Grade, BDH) in PBS into each well. Incubate for 1 h to overnight at ambient temperature.
  - d. Remove the solution. Store the plate frozen, under which conditions it remains stable for at least several weeks.
2. Heat denature PCR products by incubation at 95° C for 5 min., followed by quick-cooling to approximately 4° C.
3. Pipet 90  $\mu$ l of Hybridization Buffer (1% casein in PBS) containing 1 pmol of AP- or HRP- conjugated probe JW-14 (Synthetic Genetics) into each well.
4. Pipet 10  $\mu$ l of PCR product into the appropriate well.
5. Incubate at 42° C for 20 min. to allow both hybridization and capture.
6. Remove the hybridization solution and discard. Wash the plate 4 times with Wash Buffer.
7. Pipet 100  $\mu$ l LumiPhos into each well. For HRP-labeled probes, 100  $\mu$ l of OPD is used as the substrate.
- 8
  - a. AP-labeled Probes: Incubate at 37° C for 30 min. Read immediately in the ML1000 microplate luminometer (Dynatech).
  - b. HRP-labeled Probes: Incubate at room temperature for 15 min and OD<sub>490</sub> is read in a Molecular Devices ELISA plate reader.

### 3.2.2 PCR Product Detection by HPLC

1. Inject 30  $\mu$ l of each PCR product onto a TSK-DEAE NPR column. For greater precision, an automatic sample injector should be used, such as the ISS-200 (Perkin Elmer).

2. The following gradient (requiring approximately 9 minutes per run) is used to separate specific and non-specific PCR products:
  - a. Equilibrate column 5 minutes at 46% A.
  - b. Ramp linearly to 54% A over 0.1 minute following injection.
  - c. Ramp linearly to 60% A over 3.9 minutes.
  - d. Ramp linearly to 75% A over 1 minute.
  - e. Return to 46% A over 0.1 minute.

Buffer A: 25 mM Tris-Cl, pH 9.0, 1.0 M NaCl, 1% acetonitrile  
Buffer B: 25 mM Tris-Cl, pH 9.0, 1% acetonitrile
3. Products are detected by UV absorbance monitoring at 260 nm.
4. Integration of chromatographic peaks is by an automatic integrator (Perkin Elmer Nelson Model 1020). Specific peaks are identified by characteristic retention times as compared with strong positives and molecular weight standards (2.5  $\mu$ g of 250  $\mu$ g/ml HaeIII digest of pBR322).
5. If quantitation is desired, data should be plotted as "peak area vs. log initial copy number." A linear plot should be obtained over the range of 30 to 30,000 initial DNA template copies. Linear regression permits the estimation of copy number in unknown samples.

### 3.3 PCR Primer Selection and Development

The principle area of development for this contract has been in the design and testing of various *Leishmania*-specific PCR primer and probe combinations. For all designs, the following rational was used. Since the *Leishmania* parasites are suspected to be present in very low numbers in peripheral blood of infected individuals, it was deemed that maximal sensitivity was the key requirement for the assay.

Toward this end, it was reasoned that directing the PCR primers against a "pre-amplified" target was, if possible, the best way to increase signal strength, and hence assay sensitivity, going into

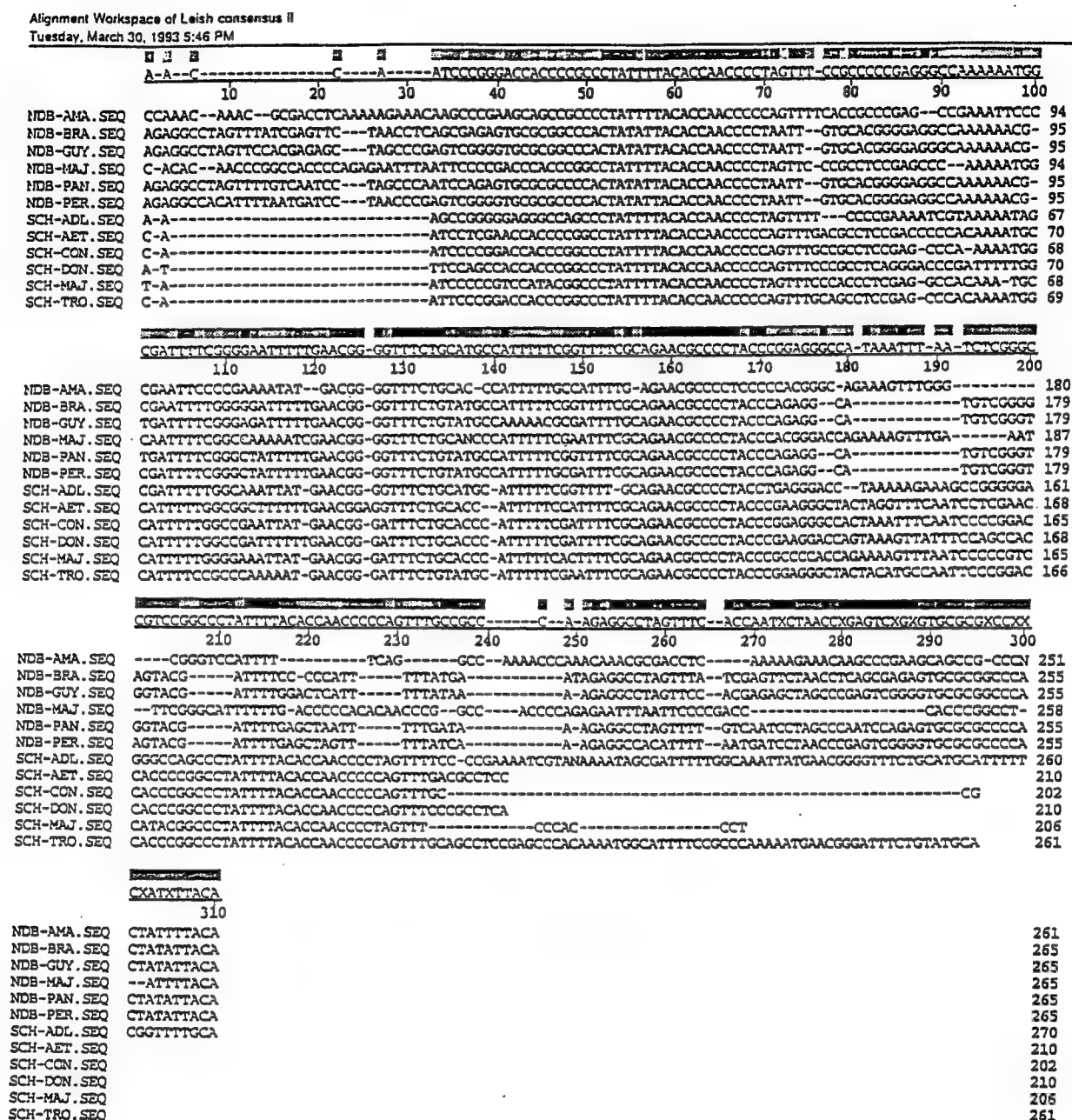
the PCR reactions themselves. Then the reaction conditions would be optimized as described previously in the Introduction to produce the maximum specific yield from each primer set. For these reasons, several PCR primer sets directed against *Leishmania* target sequences that exist in more than one copy per parasite were designed. These included sequences in the ribosomal RNA (rRNA) genes, present in 5-20 copies per organism, nuclear Dihydrofolate Reductase (DHFR) genes, that exist in 2-10 copies per parasite, certain maxicircle sequences, present in 10-100 copies per organism, and several different minicircle sequences.

The minicircle sequences offer the highest possible target number as they are present in 100-10000 copies per organism. One significant problem targeting minicircle sequences, however, is the extreme sequence heterogeneity and the observation that multiple distinct "families" of minicircles exist not only within a given parasite, but also between differing species of *Leishmania*, with the largest differences found between the New World and Old World strains. A diagram showing a comparison of the "conserved" sequence regions of a number of *Leishmania* strains is presented in Figure 3. A summary of the sequences tested is given in Table 1.

The sequences of the individual primers are given in the first section of the table, along with the target of amplification. In the JW11/12 primer set, the sequences indicated in parenthesis are mixed base positions in the synthetic oligonucleotides. The I in several other sequences indicate an inosine (I) base substitution at that position, that allows hybridization with any other base. An NW in the amplification target site indicates those sequences are specific for New World *Leishmania* strains. The JW and TW series of primers were designed in-house at SRA Technologies utilizing computer software for PCR primer design (Primer Detective, Oligo) and evaluated against potential cross-reactive sequences in Genbank using the Lasergene DNASTAR molecular biology software package running on a Mac IIci. Primer set DC 11/12, also



Figure 3: Sequence alignment of conserved region of *Leishmania* minicircle kDNA



Published sequences of *Leishmania* minicircle conserved regions were compared using LaserGene (DNASar, LTD), generating the underlined consensus sequence. The sequences designated "NDB" are the complementary strands to those reported by De Bruijn, et al (11); those designated "SCH" have been reported by Schoone, et al (9). The following abbreviations were used to refer to species and subspecies: AMA: amazonensis; BRA: braziliensis; GUY: guyanensis; MAJ: major; PAN: panamensis; PER: peruviana; ADL: adleri; AET: aethopica; CON: Schoone consensus sequence; DON: donovani.

Table 1. Sequences of *Leishmania* Specific PCR Primers.

Primer Name	Primer Sequences	Primer Location
JW11	CCTATTTTACACCAACCCC (C/T) AGTTT	minicircle
JW12	CGGGTAGGGGCGTTCTGCGAAA (A/T) T	minicircle
TW01	GCGTCTCCGACCCTCATCTTCAAGG	DHFR (nuclear)
TW02	GACACCCTCCTCTCTATAACGGC	DHFR (nuclear)
TW03	ATTGAAATAATAAAAGGTTGAGC	maxicircle
TW04	AATTACAAATAATAGATCCTTGCG	maxicircle
JW16	GAATTGATTTTCGCAGAACGCCCT	minicircle
JW17	GAATTCAAACGCGGGGTTGGTGTGTAAAAT	minicircle
R222	TATTGGAGATTATGGAGCTG	rRNA gene
R332	GGCCGGTAAAGGCCGAATAG	rRNA gene
LK1S	CCTATTTTACACCAACCCC	minicircle
LK2R	GGGTAGGGGCGTTCTGCGA	minicircle
LS1	GGGGTTGGTGTAAAATAG	minicircle
LS2	CCAGTTTCCCGCCCCG	minicircle
B1	GGGGTTGGTGTAAATATAGTGG	minicircle NW
B2	CTAATTGTGCACGGGGAGG	minicircle NW
B3	CCCGACATGCCTCTGGGTAG	minicircle NW
PROBE P1	CAGAAACCCCGTTCAAAAAT	minicircle NW
JW-11-i	CCTATTTTACACCAACCCCIAGTTT	minicircle
JW-12-i	CGGGTAGGGGCGTTCTGCGAAAIT	minicircle
C-JW11-1	CCTATTTTACACCAACCCCIATTTI	minicircle
C-JW11-2	CCTATTTTACACCAACCCCIATTT	minicircle
C-JW11-3	CCTATTTTACACCAACCCCIAT	minicircle
C-JW12-1	CGGGIAGGGGCGTTCTGCGAAAI	minicircle
C-JW12-2	CGGGTAGGGGCGTTCTGCGAAAA	minicircle
C-JW14-1	ATTGAACGGGTTTTCTGTATICTTTTTTCGAA	minicircle
C-JW14-2	ATTIGAACGGGTTTTCTGTATICTTTTTTIGAA	minicircle
C-JW14-3	GAACGGGTTTTCTGTATICTTTTTTCGTTTT	minicircle
JW-21	TGAACGGGTTTTCTGTATICTTTTT	minicircle
JW-22	GGGGTTGGTGTAAAATAGGICIG	minicircle
JW-24	CATTTTTTCIIITTTTCGCAGAACGCCCTACC	minicircle
DC-11	CCCTATTTTACACCAACCCCCAGTTT	minicircle
DC-12	CGGGTAGGGGCGTTCTGCGAAATT	minicircle
DC-LT-1	ACCACCCGGCCCTATTTTA	minicircle
DC-LT-2	ATGTAGTAGCCCTCCGGGT	minicircle

designed in-house at SRA, is similar to JW 11/12 primer set except that the mixed base positions (bold face) were a perfect match for *L. tropica* kDNA sequence. The sources of the other primer sequences are as follows: R222/332 (ref. 9); LK1S/2R (Personal communication from G. van Eys to Maj. E. Nuzum) and LS1/LS2 (ref. 10).

### 3.3.1 PCR primer sets against Old World species of *Leishmania*

During Phase I of this project, we tested the sensitivities of JW 11/12 primer set against the strains of Old World *Leishmania*. Table 2 indicates the detection limits of primer set JW 11/12 when compared against control strains of *Leishmania* parasites.

**Table 2: Detection of various *Leishmania* species using the minicircle-specific PCR primers JW 11/12.**

Species of <i>Leishmania</i>	# <i>Leishmania</i> Detected with (JW 11/12)			
	1000	100	10	1
746 ( <i>L. panamensis</i> )	+	+		
842 ( <i>L. mexicana</i> )	+			
1031 ( <i>L. guyanensis</i> )	+	+	+	+
1041 ( <i>L. major</i> )	+			
1063 ( <i>L. tropica</i> )	+	+	+	+
1077 ( <i>L. major</i> )	+	+	+	
2053 ( <i>L. donovani</i> )	+	+		
669 ( <i>L. amazonensis</i> )	+			
746 ( <i>L. panamensis</i> )	+	+	+	
1003 ( <i>L. braziliensis</i> )	+	+		
2086a ( <i>L. braziliensis</i> )	+	+	+	
2086b ( <i>L. braziliensis</i> )	+	+	+	

Note: A plus (+) indicates that signal at least 5-fold above assay background was consistently obtained against that species, with lower numbers indicating greater sensitivity)

The sensitivity of various combinations of inosine-substituted primer sets against *L. tropica* and *L. donovani* is presented in Charts 1 and 2, respectively. The sensitivity of JW 11/12 and JW 11i/12i primer sets was retested during the Phase II of the project. Two separate sets of *L. tropica* cultures (stock 1063/5-24-94 and a stock of three cultures (6-3-94) grown at WRAIR were used for this testing. Chart 3 summarizes the results of this testing. The results indicate a sensitivity limit of 10 parasites for both primer sets against *L. tropica*. Table 3 summarizes the results of testing various combinations of primer sets against *L. tropica*.

Table 3: Sensitivity of various primer sets against *L. tropica*

Primer Combinations	Detection Limits on <i>L. tropica</i>
JW11/12	Approximately 1-100 parasites
TW03/04	Approximately 100 parasites
TW01/02	Greater than 1000 parasites
R222/332	Greater than 1000 parasites
JW16/17	Greater than 1000 parasites
LK1S/2R	Greater than 1000 parasites
LS1/2	Greater than 1000 parasites
B1/B2	Greater than 1000 parasites
JW11i/JW12i	Approximately 1-100 parasites
JW21/JW22	Approximately 100 parasites
DC11/12	Approximately 100 parasites
DC-LT-1/DC-LT-2	Approximately 1 parasite

Similar testing was done with other Old World species of *Leishmania* during the course of this contract. The results are presented in Charts 4 and 5 for *L. donovani* and in Charts 6 and 7, for *L. chagasi*. These combinations were tested using our optimized PCR protocols and the HRP-coupled capture plate assay.

Chart 1. PCR Primers Tested Against *L. tropica*

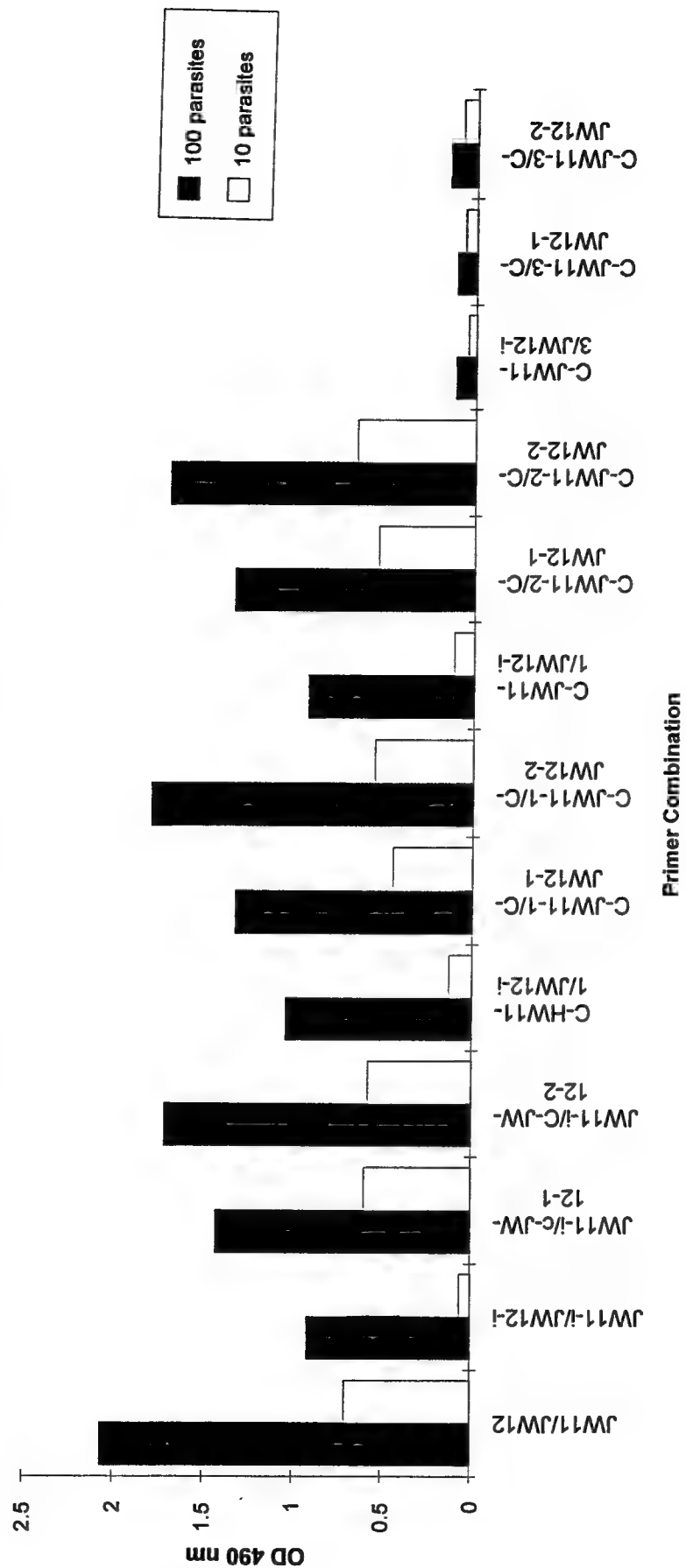


Chart 2. PCR Primers Against *L. donovani*

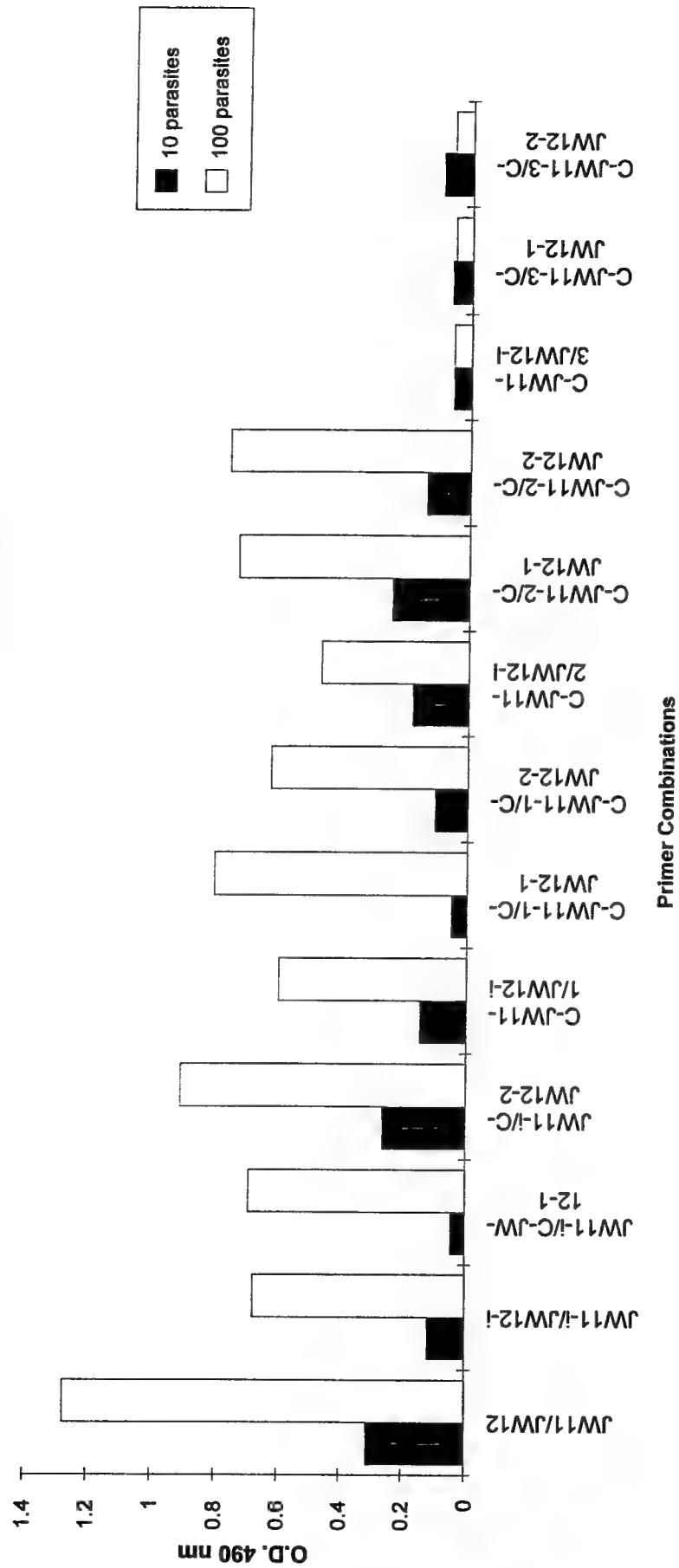


Chart 3. L. tropica (6/3/94) Testing of cultures with JW 11i/12i primer set

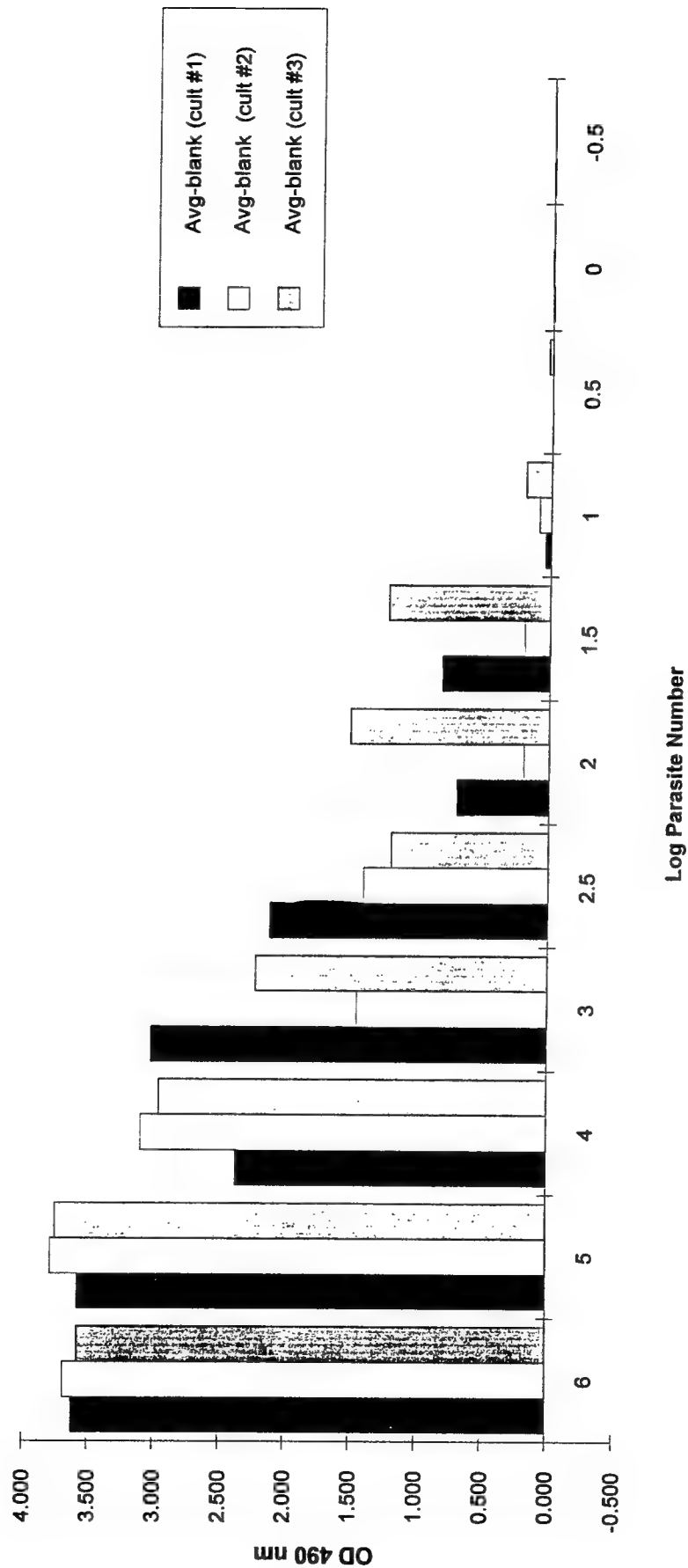




Chart 4. L. donovani (Stock 1073) Testing of JW 11/12 and JW 11i/12i primer sets

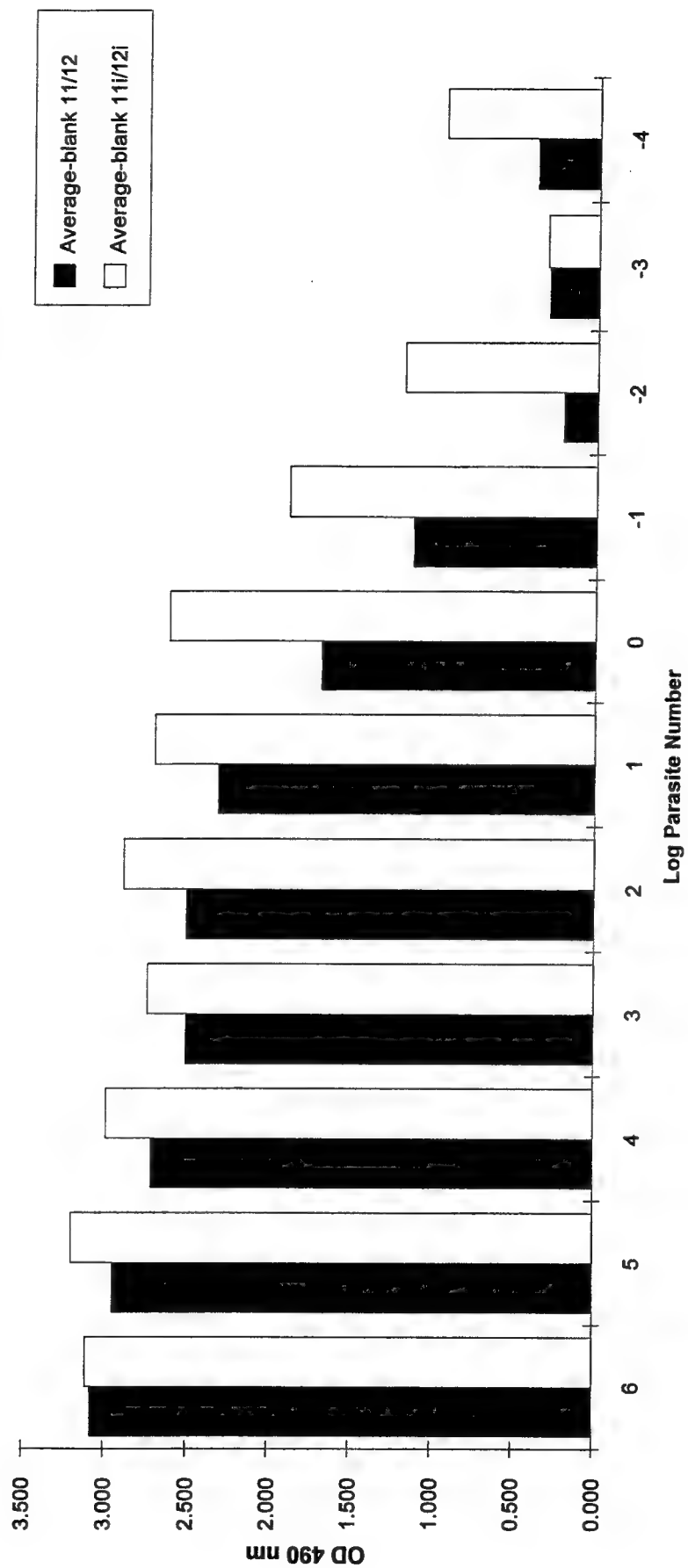


Chart 5. L. donovani (stock 7-13-94) Testing with primer sets JW 11/12 and JW 11i/12i

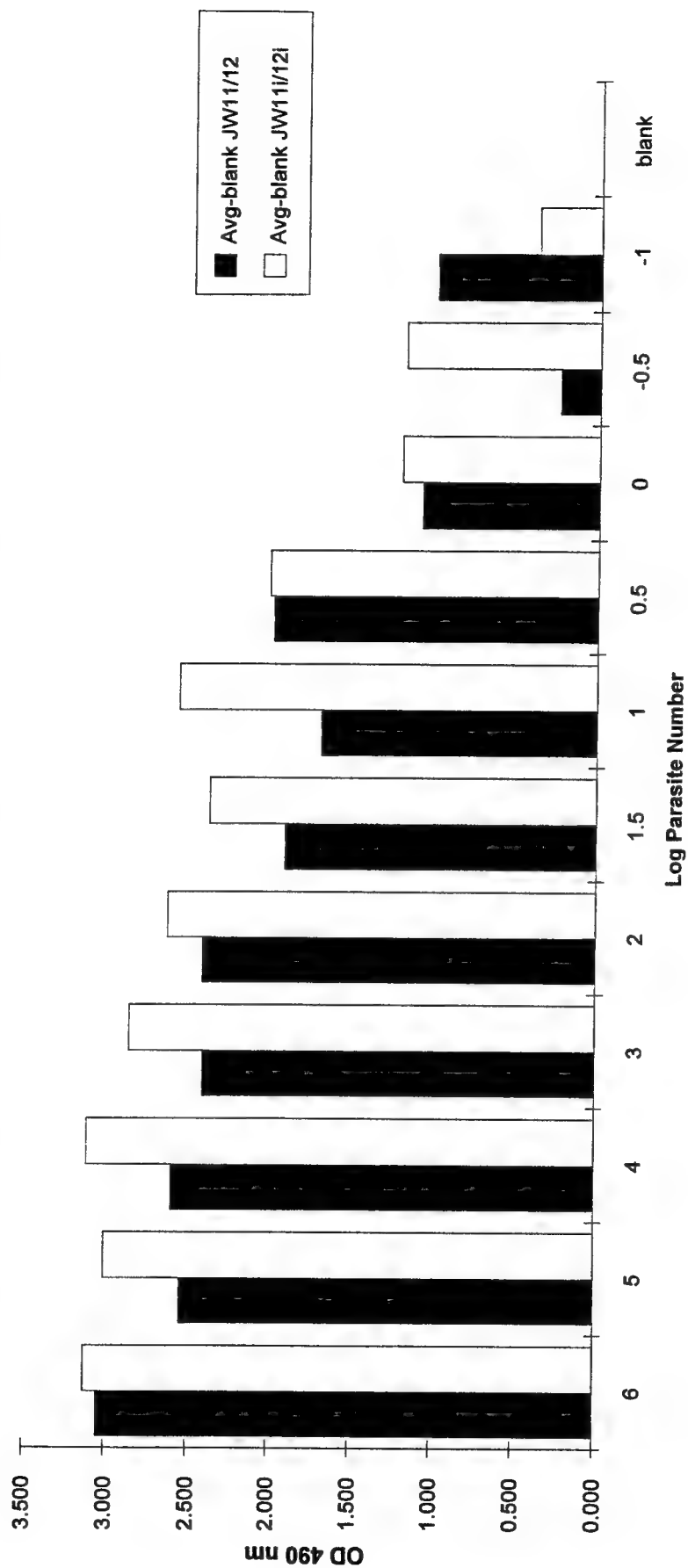


Chart 6. L. chagasi (testing with primer sets JW 11/12 and JW 11i/12i)

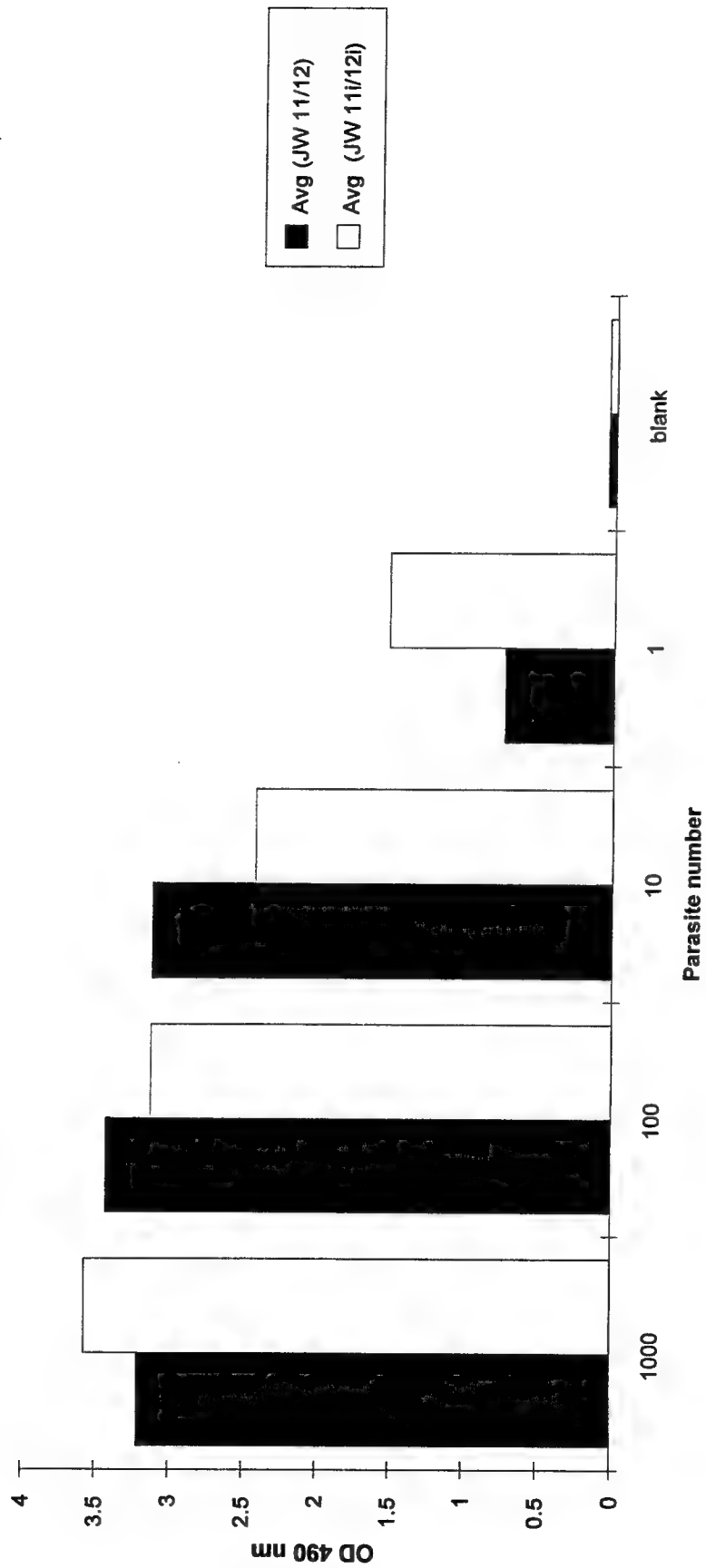
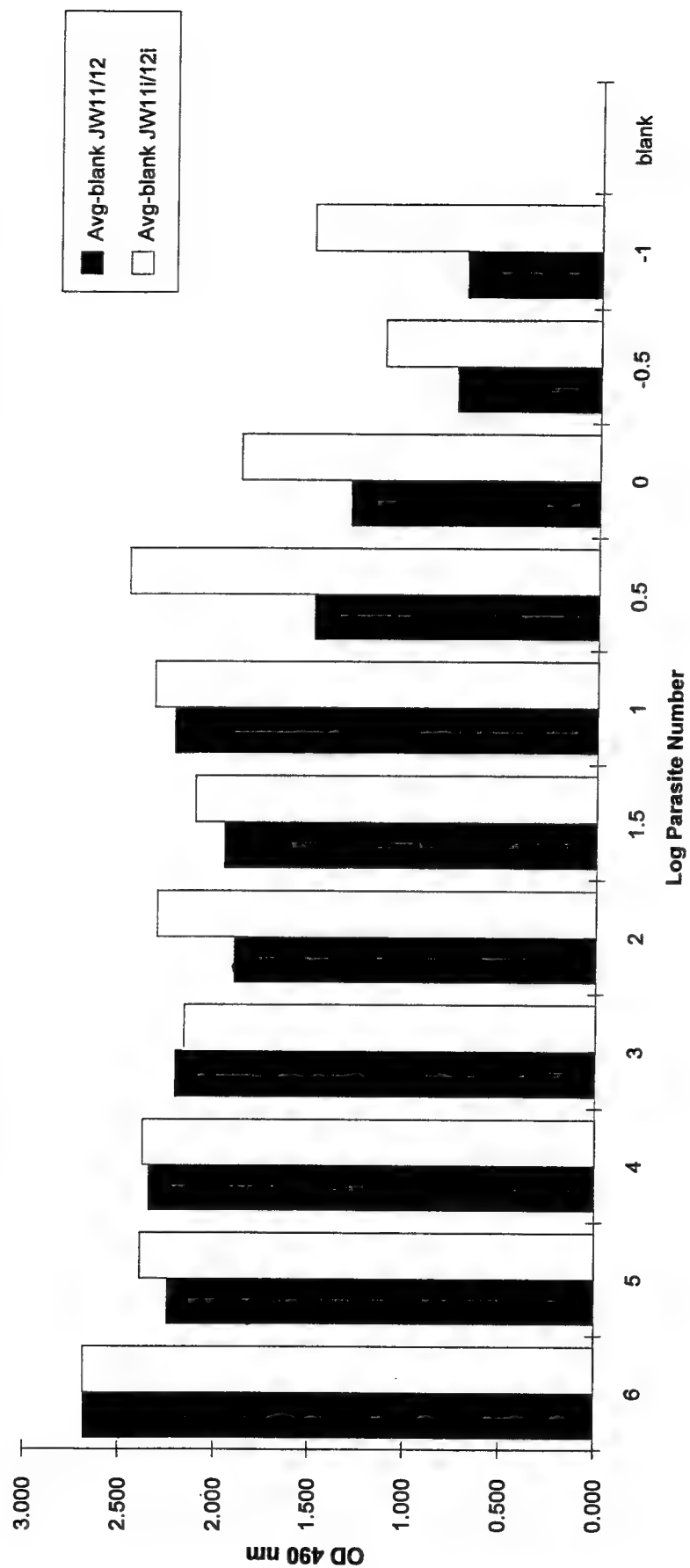


Chart 7. L. chagasi (stock 7-13-94) Testing with primer sets JW 11/12 and JW 11i/12i



To date, the most consistent and sensitive primer sets against the strains of old world *Leishmanias* examined are JW 11/12 and JW 11i/12i. The sensitivity limit is less than one parasite, for *L. donovani* and *L. chagasi*. However for *L. tropica*, the detection limit is one parasite with the newly tested primer set, DC-LT-1 and DC-LT-2; and it varies from 1-100 parasites with JW 11/12 and JW 11i/12i primer sets. As can be readily seen from the previous tables and charts, the inosine substituted primer set JW 11i/12i, seem to provide slightly higher sensitivity against control samples from *L. donovani* (presumably the causative agent of Kala-Azar) and *L. chagasi*. Their sensitivity, however remains the same, particularly against *L. tropica*. Other primer sets, except DC-LT-1/DC-LT-2 (a primer set designed in-house with sequences optimized to *L. tropica*), that have been tested to date are significantly less sensitive when tested against *L. tropica* parasites (Table 3).

### **3.3.2 PCR Primers with Multiple Inosine Substitutions for New World species of *Leishmania***

During the course of this study, a number of samples from South and Central America, both as controls and as patients with suspicious disease, were provided for testing. It became readily obvious when testing against control strains provided by MAJ M. Grog1 that the sensitivity of the basic JW11/12 PCR primer set was much better against Old World than the New World strains. It was the opinion of the *Leishmania* Working Group that in addition to the original requirement for a PCR based detection test that was sensitive against the Old World strains prevalent in South West Asia, it would be useful to have a test usable against at least some of the New World strains of *Leishmania* for use with patient samples obtained from service personnel stationed in South and Central America. Toward these ends, it was decided to try designing PCR primers with multiple inosine substitutions at those DNA base positions that differ between characterized New and Old World *Leishmania* strains (see Figure 3).

A collection of inosine-substituted primers based on the most sensitive PCR primer set tested to date (JW11/12) was developed and tested in various pairwise combinations. The results of these tests for *L. braziliensis* comparing the pairwise combinations of these primers are given in Chart 8. These combinations were tested using our optimized PCR protocol and the HRP-coupled capture plate assay against 10 and 100 parasite equivalents of parasite DNA for *L. braziliensis*. Higher signal indicates greater PCR yield, and therefore, greater sensitivity of that particular PCR primer combination against the species of *Leishmania* in question. Based on the results obtained from this experiment, primer pair combinations were retested during Phase II of this contract, against two New World species of *Leishmania*, namely *L. braziliensis* and *L. panamensis*. All primer combinations efficiently detected one parasite under the conditions used for testing. Two primer sets, c-JW11-3/c-JW12-1 and c-JW11-3/c-JW12-2, showed a sensitivity, 2- to 5-fold higher than others (Charts 9 and 10). The sequences of the second primer set is compared below with the original JW 11/12 primer set.

JW-11        CCTATTTTACACCAACCCC (A/T) AGTTT

JW-12        CGGGTAGGGGCGTTCTGCGAAA (A/T) T

C-JW-11-3   CCTAT**TTT**ACACCAACCCC**TAI**

JW-12-2     CGGGTAGGGGCGTTCTGCGAAAA

The sequence differences are indicated in *bold italics*. The A/T indicates a mixed base composition at this position. Using this primer set, while not sufficiently different to be a truly independent second set, PCR conditions were reoptimized for *L. braziliensis*, as a representative of New World species of *Leishmania*. The reoptimized parameters included the testing of annealing temperatures of the primers and the concentrations of magnesium ions in the PCR mix. The results of three typical experiments are presented in Table 4. Additionally, a comparison of the standard PCR conditions and conditions optimized for *L. braziliensis* is presented

Chart 8. PCR primers against *L. braziliensis*

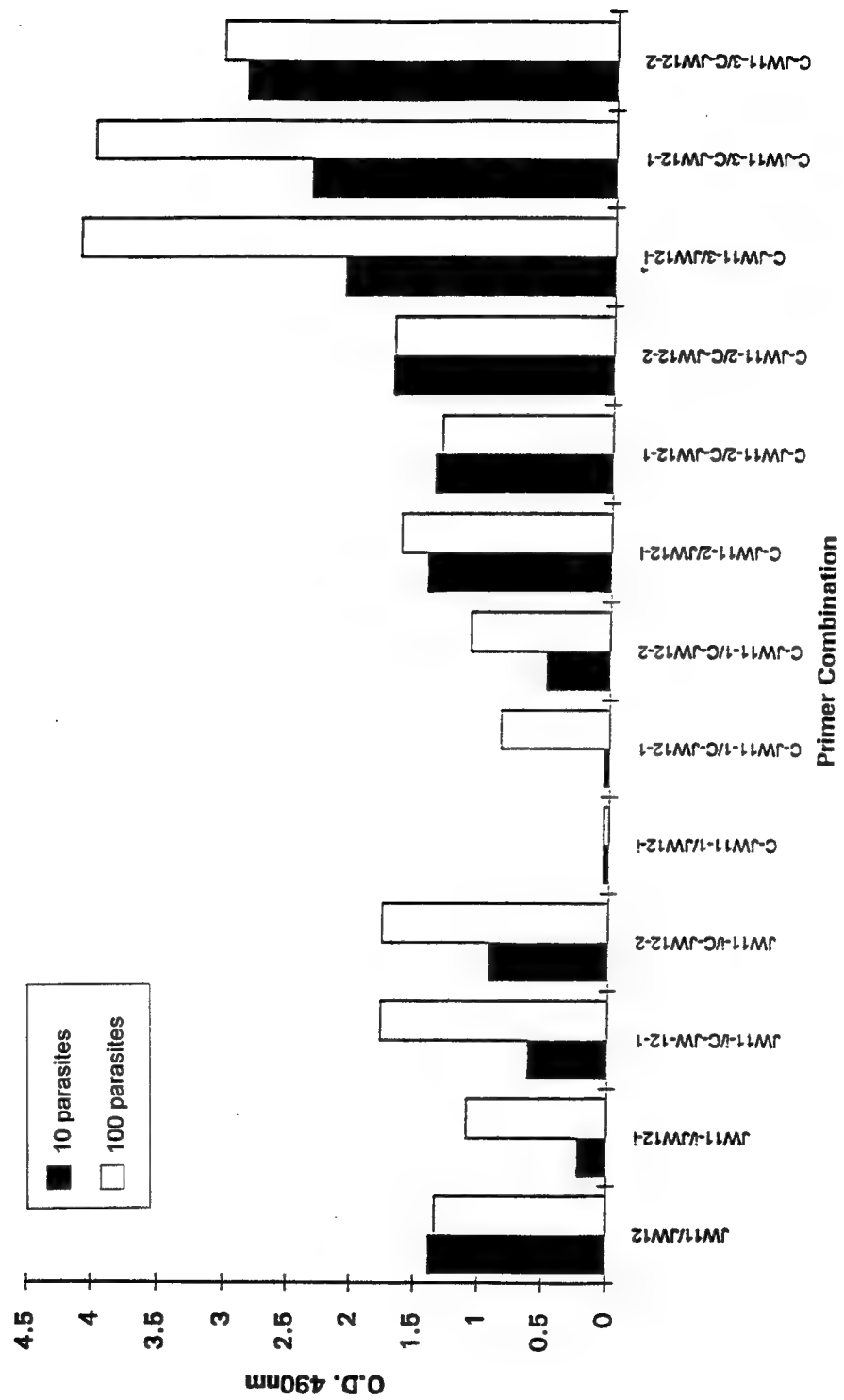




Chart 9. *L. braziliensis* (Testing of primer combinations)

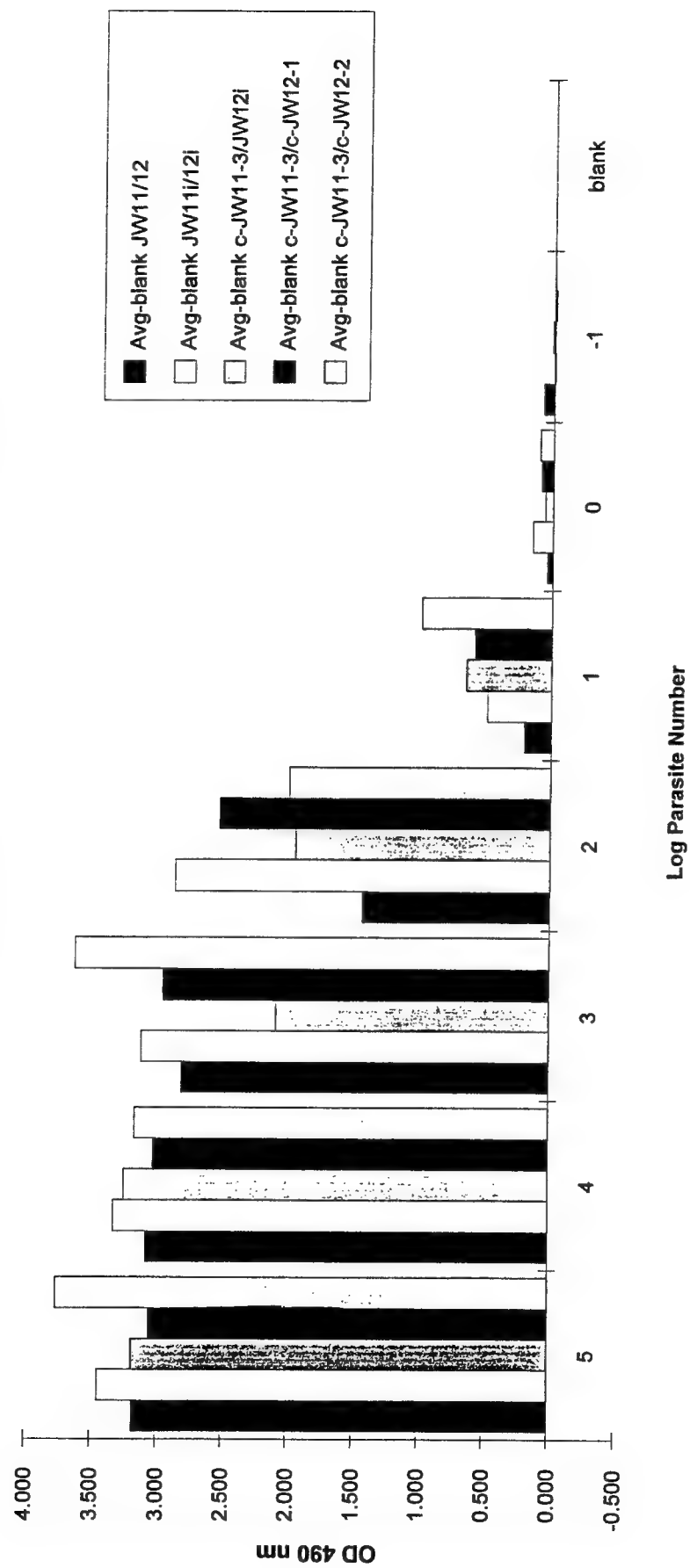
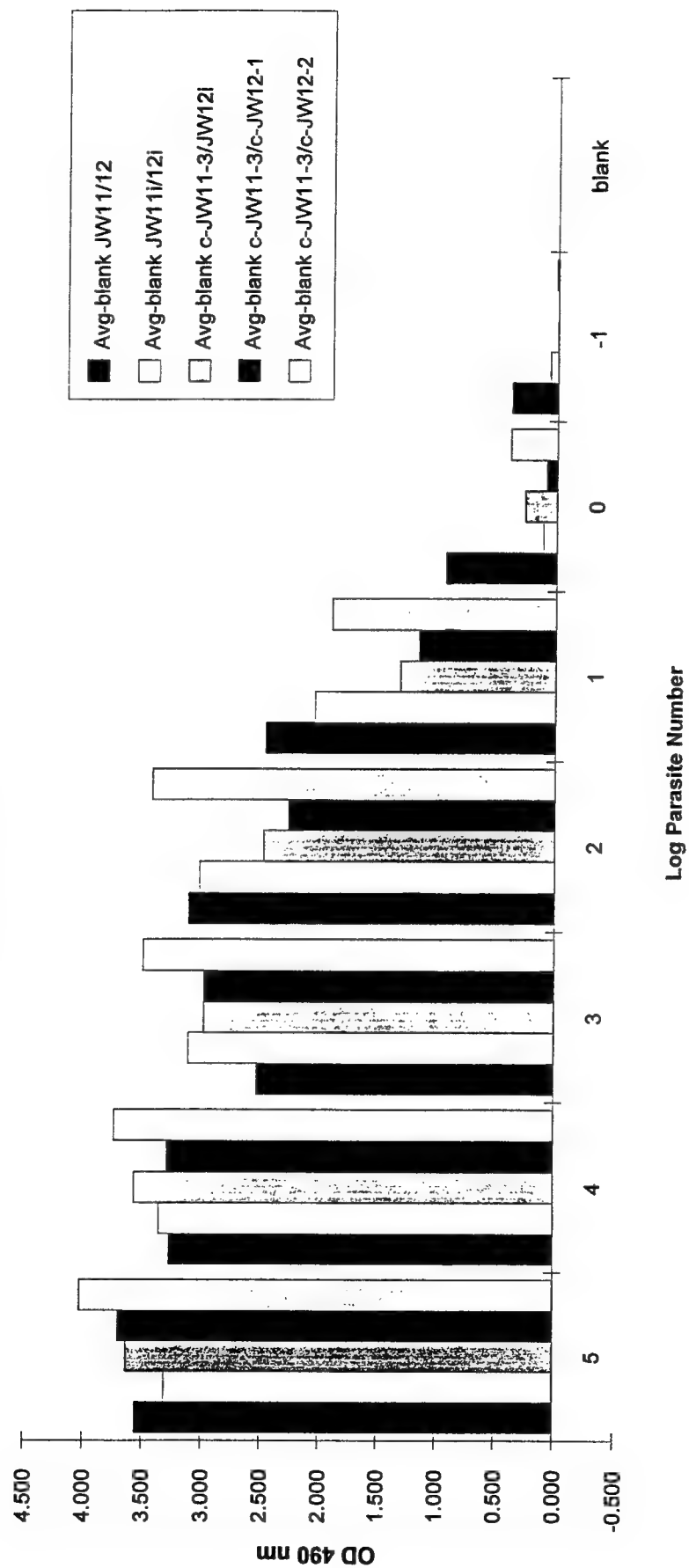


Chart 10. L. panamensis (Testing primer combinations)



in Chart 11. Further HPLC analysis of the PCR products of this optimization is needed to confirm the absence of any non-specific amplification products.

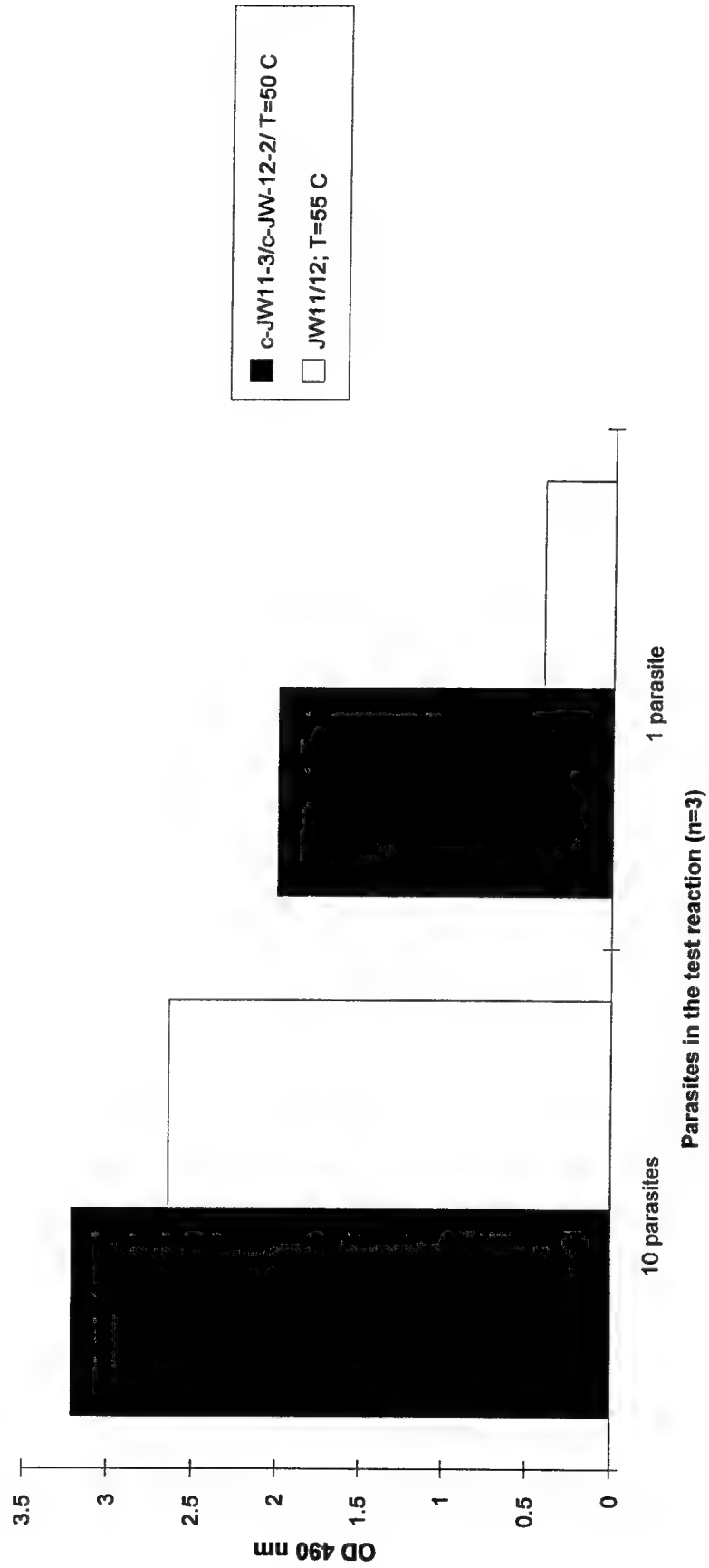
**Table 4. Results of PCR optimization for *L. braziliensis***  
(the values represent colorimetric readout ( $A_{490}$ )  
from HRP capture plate assay of PCR products)

<b>Annealing temperature</b>	<b>45° C</b>	<b>50° C</b>	<b>55° C</b>	<b>60° C</b>
10 parasites (Test 1)	2.726	3.046	2.679	0.430
<b>Annealing temperature</b>	<b>45° C</b>	<b>48° C</b>	<b>50° C</b>	<b>53° C</b>
10 parasites (Test 2)	2.423	2.593	2.235	1.079
1 parasite	0.526	0.940	0.999	0.430
<b>MgCl<sub>2</sub> concentration</b>	<b>1.5 mM</b>	<b>2.0 mM</b>	<b>2.5 mM</b>	<b>3.0 mM</b>
10 parasites (Test 3)	2.768	2.739	2.792	2.698
1 parasite	1.139	1.143	0.703	0.713
<b>New Parameters</b>	<b>Annealing Temp. 50° C</b>		<b>MgCl<sub>2</sub> conc. 2-2.25 mM</b> (same as before)	

Briefly, the more conservatively inosine-substituted primers give at least equivalent sensitivity to the JW 11/12 primer set for *L. tropica*, *L. chagasi* and *L. donovani*. Some of the more extensively inosine-substituted primers give increased sensitivity against the New World strain *L. braziliensis*, but show reduced signal when tested against the Old World strains of *L. tropica* and *L. donovani*. Based on these results, it was decided that since sensitivity against the Old World strains was of primary importance, the use of the more extensively inosine-substituted primers (eg. C-JW11-3/C-JW12-2) would be restricted to samples with origins in geographic regions where New World stains of *Leishmania* predominate.

Another idea for an additional primer set was explored, using JW-21/JW-22 primer set and JW-24 probe (modification of the conserved

Chart 11. L. braziliensis (comparison of standard vs optimized PCR conditions)



regions of of the original JW-11/12 primer set and JW-14 probe; Table 2). Unfortunately, the results of such testings were disappointing in terms of sensitivity when compared to the basic JW 11/12 primer set.

### 3.4 Decatenation of *Leishmania* kDNA minicircles

Additional experiments were done to further increase the sensitivity of the PCR detection test. One set of experiments proposed in SRA's response to the contract proposal was the use of procedures to "decatenate" the *Leishmania* kinetoplast DNA, theoretically releasing most of the minicircle and maxicircle DNA fragments into solution. This could potentially increase the chance of detection of *Leishmania* parasites by making more target DNA templates accessible for PCR. After evaluating a number of potential treatments our results are reported below.

#### 3.4.1 Decatenation Protocol

##### Protocol 1

Equal quantities of *Leishmania* parasite lysates were used for each treatment. Controls were lysates stored at -20° C. Treatments included;

1. Incubation at 37° C overnight.
2. Digestion with the restriction enzymes DraI, EcoRI, or BamHI at 37° C overnight using 20-50 units of enzyme. These enzymes have each been reported to introduce a single specific cut in some minicircles, linearizing the DNA.
3. Treatment with Topoisomerase II (20 units) overnight at 37° C. Topoisomerase II introduces double stranded transient breaks in DNA allowing decatenation of concatenated circles and reduction of supercoiling induced torsional strain in circular molecules, facilitating denaturation of the circular DNA.
4. Limited digestion with an inorganic Iron nuclease to introduce random double stranded breaks in all DNA present in the reaction.

5. Following treatments, each lysate was serially diluted 10 fold to give a range of 10 to 0.001 parasite equivalents, and subjected to PCR analysis as described.

#### Protocol 2 (tested for *L. tropica*)

Total DNA from *L. tropica* was prepared by extracting lysate of the parasites with phenol:chloroform and precipitation with ethanol.

1. Equal quantities of total DNA and cell lysates representing 1000 parasites were treated with 10 Units of Topoisomerase II (Topogen, Inc.) and 10-20 Units of restriction enzyme XhoI (this enzyme works better than other restriction enzymes and some times even better than Topoisomerase II for unrelated purified kDNA)
2. The samples treated with Topoisomerase were incubated for 60 min, 90 min and 120 minutes at 37° C and those treated with XhoI were incubated for 1-2 h at 37° C.
3. The reaction was stopped by heat treatment at 95° C for 5 minutes. Serial 10-fold dilutions (1000 - 0.1 parasites) were prepared and subjected for routine PCR amplification using JW 11i/12i primer set. Following amplification, the samples were detected using JW14-HRP probe as described.
4. Undigested DNA and lysate controls were also included with the assay.

#### **3.4.2 Results of the Decatenation Experiments**

Unfortunately, multiple experiments failed to show any significant difference in PCR product yield, and hence sensitivity of the reaction, when compared to untreated controls with the equivalent amounts of DNA or lysate in the reaction mix. The results of all tests were within +/- 20% of the signal produced by the untreated controls at each dilution point. A reproducible dose-response curve was not always obtained upon repeated testing to confirm the effect of decatenation (data not shown). Based on these results, we believe further experimentation along these lines is not currently warranted.

In view of the problems encountered in decatenation of kDNA, either from the total genomic DNA or from the specimen lysates, it was considered important to construct a copy control plasmid to test the sensitivity of the PCR assay developed for *Leishmania*. Such a copy number control not only would determine the analytical sensitivity of the assay, as copy number per reaction, rather than parasite number per reaction, but also would elucidate the meaning of weakly positive reactions. The best control would be derived from the strain(s) of interest, especially, *L. tropica*, where the sensitivity of the assay varies from 1 to 100 parasites. The primers bordering the constant regions, outside the JW 11/12 primer binding regions, were chosen for this purpose. The sequence of two such primers and their location in relation to JW 11/12 is presented below:

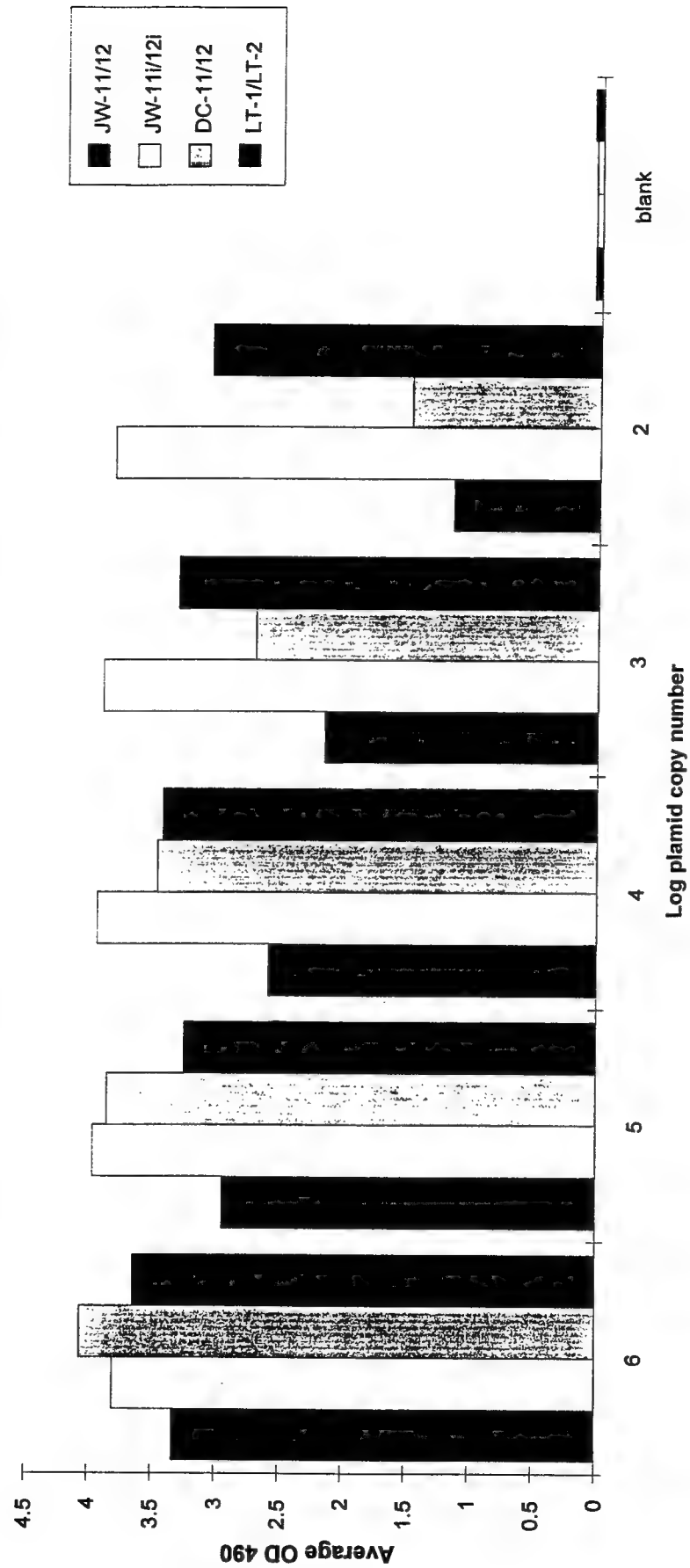
5' - CCTATTTTACACCAACCCC (C/T) AGTTT - 3' (JW 11)

5' -CGGGTAGGGGCGTTCTGCGAAA (A/T) T-3' (JW 12)

Primers DC-LT-1 and DC-LT-2 are up stream of JW 11 and JW 12 primers, respectively, but overlap 5-10 nucleotides towards their 3' end with the 5' ends of JW 11/12. Therefore, the amplicons generated with these primers are slightly larger than JW 11/12 amplicons and would carry the original JW 11/12 sequences for further amplification.

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Chart 12. Testing of *L. tropica* copy control plasmid with different primers





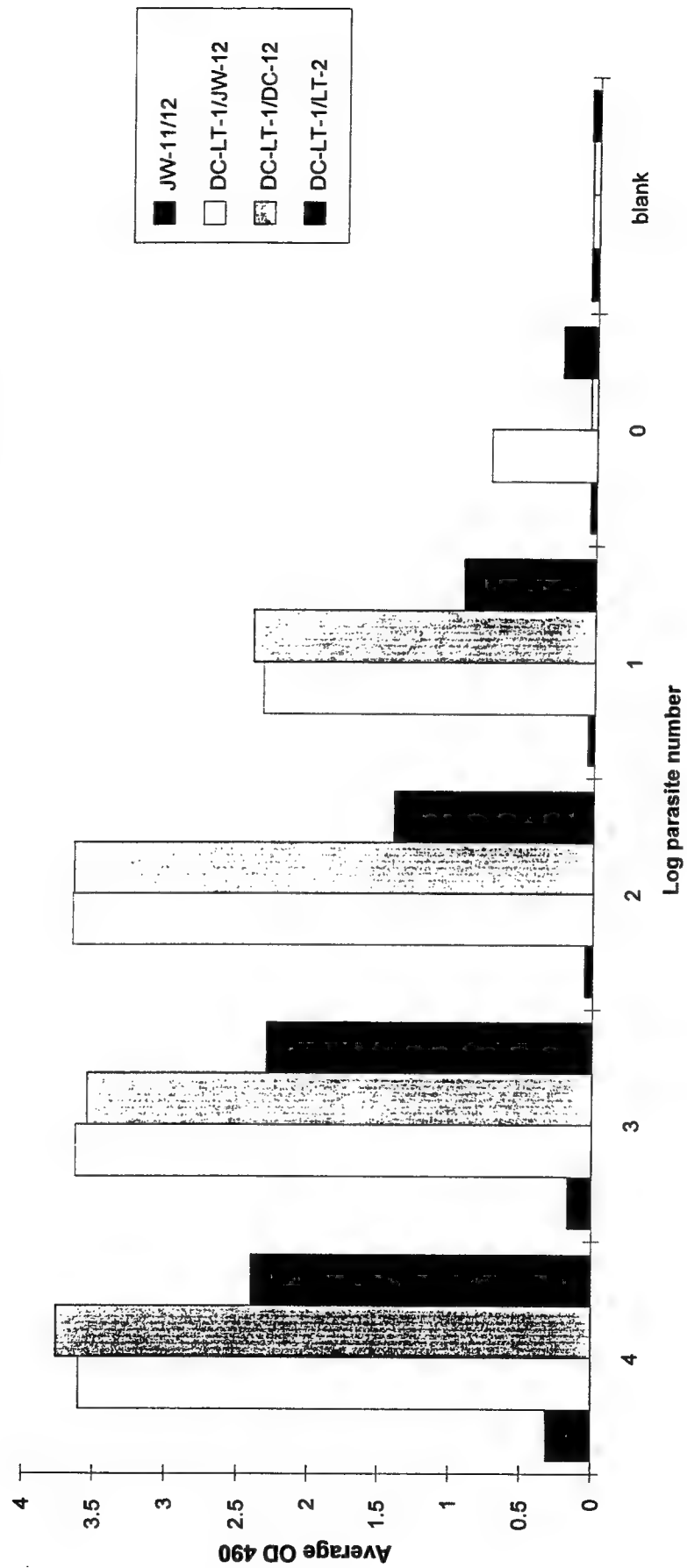
analytical sensitivity of PCR reactions for *L. tropica*. The result of one such test is presented in Chart 12. All primer sets tested (JW 11/12 and JW 11i/12i (the original primer sets); DC 11/12 (in-house primer set, similar to JW 11/12, with mixed base position matching to *L. tropica* sequence and DC-LT-1 and DC-LT-2 (the primer set used for cloning the PCR products), amplify the *L. tropica* copy control plasmid pDCL-3 very efficiently and the analytical sensitivity of detection is about 100 copies (lowest copy number used in the assay). The absolute signal strength with primer sets JW 11i/12i and DC-LT-1/LT-2 is about 2-fold higher compared with JW 11/12 and DC 11/12 indicating the sensitivities of assay may possibly be less than 100 copies (not tested).

The new primer set DC-LT-1/LT-2, although contains about 5-10 nucleotides from the 5' terminal regions of the original JW 11 and 12 primers, is unique from all other primer sets tested so far, in that, it completely lacks the mixed base sequences. The preliminary tests indicate that the sensitivity of this primer set and the combination of DC-LT-1 (sense primer) with JW 12 (antisense) provides a better sensitivity (detection of one parasite), compared to other primer sets used in the assay, in amplifying *L. tropica* sequences (Chart 13). It appears that the extreme degree of sequence variability present in *L. tropica*, prevents consistent amplification with JW 11/12 and other primers, which always include the mixed-base region; and primers outside this mixed base position seem to favour a reasonably good efficiency of amplification. Further tests are needed to confirm the superior performance of the new primer set, DC-LT-1/LT-2, before adopting it, over JW 11/12 or JW 11i/12i primer sets, for evaluation of clinical samples.

### 3.6 Heterologous DNA Testing

It was suggested in the Statement of Work and by the Leishmania Working Group that we test a variety of heterologous DNAs using our PCR detection technique to ensure specificity of the primers and

Chat 13. Testing of DC-LT-1 as the sense primer for *L. tropica*



probes being used. A list of possible organisms was provided by the Leishmania Working Group and included the following;

*Trypanosoma cruzi*, *T. gambiense*, *T. rhodesiense*, *T rangeli*.  
*Leptomone*, *Crithidia*, *Herpetomonas*, *Toxoplasma*, *Plasmodium falciparum*, *Babesia*, *Pneumocystis carinii*, *Herpes*, *Salmonella*, *Histoplasma capsulatum*, *Mycobacterium tuberculosis*, HIV, and Hepatitis B and C.

After receiving information from MAJ Grogl regarding the availability of certain heterologous DNAs from the ATCC, we obtained the necessary permit applications to purchase samples of these organisms as many of them are classified as Class II, III, and IV pathogens. Testing the DNA obtained by protocols appropriate for DNA isolation from each type of organism at 1  $\mu$ g concentrations in our standard PCR reactions did not produce any detectable signal from any of the organisms listed. Additional tests against blind negative control patients with Malaria and several other tropical diseases also produced no false positive reactions, indicating that the current PCR primers and conditions are specific for *Leishmania* kDNA and do not cross-react to any significant degree with the heterologous DNAs tested.

### **3.7 PCR Results on Patient Samples**

During the course of the contract period, a number of patient samples have been received and tested using the PCR protocols described in this report. A complete listing of all samples tested to date is included in Appendix I of this report.

These samples partitioned into several categories including: (1) positive and negative control samples obtained from patients with known diseases including Kala-Azar, Malaria, HIV infection, etc; (2) canine samples used for potential animal model work; (3) spiked controls; and (4) a large number of "rule out" patient samples. The

latter category was comprised of samples (blood, bone marrow, and on occasion, spleen, liver, skin and other tissue specimens) from patients who present with clinical symptoms that may indicate *Leishmania* infection.

While the unknown patient samples represented the most important aspect of the assay development, they are also the most difficult to evaluate in terms of test accuracy. A large number of the unknown patient samples (1068) have tested negative while in comparison only a few (272) have tested positive. In most cases, positive results were confirmed by clinical data, such as, IFA, culture, etc (LTC E. Nuzum, personal communication). In contrast, some of the negative PCR results can be considered "biological false negatives". In some cases, very few or no circulating parasite-infected cells are present in the patient samples. This is particularly true with patients undergoing successful treatment or those exhibiting cutaneous lesions without visceralization of the disease. From the latter patients, aspirates of the lesion itself may test positive by PCR whereas peripheral blood samples may test negative.

This result is to be distinguished from a "technical false negative" which is defined as a sample that contains *Leishmania* DNA, but presents a false negative result when tested by PCR. These results are extremely rare and may be explained in several ways. As indicated previously (Charts 1, 2, 8, 9 and 10) different species of *Leishmania* exhibit differing limits of detection using our current PCR protocol. It is possible that in some cases, the particular species of *Leishmania* present in a given sample is at a level undetectable using our current primer sets. Another possible explanation is the presence of inhibitory material in the patient sample that prevents PCR amplification of the *Leishmania* DNA. This possibility was evaluated in all suspected "biological false negative" results seen to date by re-assaying the sample with a fixed level of *Leishmania* control DNA spiked into the sample. In all cases, the spiked DNA was detected with approximately the same signal

strength as seen from a parallel reaction containing the same level of *Leishmania* control DNA in reaction buffer, effectively ruling out the presence of significant inhibition in those samples.

During the course of Phase I of this contract, a number of blind negative samples have been assayed and results were clean (0/15 samples tested) with no false positives. Additionally, samples from patients with Malaria or other tropical diseases, prevalent in the region, where the *Leishmania* parasites are found, were also tested. In all cases, no positive reactions were seen. These results reflect the degree of care taken and the effectiveness of the containment procedures followed at our laboratory in preventing cross contamination.

In comparison, results obtained from a panel of 64 blinded control samples taken from patients with Kala-Azar disease at various stages, representing several geographical locations (Kenya, India, Brazil), the following statistics were obtained (provided by COL J. Berman); When samples come from samples prior to patient therapy,  $\geq 92\%$  are positive by PCR assay, therefore yielding a false negative rate of  $\leq 8\%$ , depending upon the source of the patient sample. If the patient has completed therapy by 2-6 months, 0-4 patients (0%) are positive, indicating the effectiveness of the therapy at removing detectable levels of *Leishmania* DNA from peripheral blood. Interestingly, the detection rate for purely cutaneous disease was approximately 11% (1 out of 9), indicating the absence of detectable *Leishmania* DNA in peripheral blood if the disease is confined to skin lesions. However, aspirates taken from cutaneous lesions of these patients do test positive by PCR, confirming the presence of parasitic DNA in an actively infected lesion.

#### 4. Conclusions

The need for sensitivity in detecting the very low levels of *Leishmania* present in peripheral blood suggests that the optimal

target sequence would be "pre-amplified", such as DNA present in multiple copies in each parasite. The kinetoplast DNA (kDNA) found in *Leishmania* and related organisms presents a good example of this kind of target. One inherent limitation this target sequence presents, however, is the genetic diversity of kDNA. Differences exist throughout this sequence, not only between different species of *Leishmania*, but also potentially within a given organism. The concatenated nature of the target, where some minicircles may not be available to the PCR primers and therefore amplification, presents yet another potential problem reducing sensitivity for the PCR reaction. Within these limitations, some regions of conserved DNA sequence have been observed across multiple *Leishmania* species, although there is more similarity within the New and Old World species than there is between these divisions.

Utilizing DNA sequence information and computer homology searches, multiple PCR primers have been designed within these kDNA sequences, and tested to produce specific PCR products with no significant cross-reaction with non-*Leishmania* DNA. The reaction conditions have been optimized to detect one parasite equivalents in peripheral blood and evaluated with blinded negative and positive control patient samples from various geographical locations. The testing procedures described reliably detect *Leishmania* in samples from most of the infected patients (> 90%) tested and resulted in no false positive diagnosis.

Based on the results obtained during this contract period, SRA Technologies has developed and validated a sensitive and specific PCR based diagnostic test for Leishmaniasis. While we received only 1420 patient samples (Appendix I) to screen for *Leishmania* infection, and there are certain biological factors regarding the low level of Leishmanial DNA present in peripheral blood in some cases, we are confident that the test can be applied successfully on a large scale basis.

Among the information gained as a result of our development and validation of the assay, are novel observations regarding the level of *Leishmania* parasites (as indicated by the presence of *Leishmania* DNA detectable by the PCR assay). It is evident even from our limited number of samples, that *Leishmania* are either absent, or present in extremely low levels (less than 1 parasite or infected cell in  $1.5 \times 10^6$  PBMCs or 1.5-2 mls of blood) in cases of cutaneous disease, or in patients during and after suitable anti-Leishmanial therapies. These biological effects may limit the use of any test that detects *Leishmania* in peripheral blood to cases of visceral disease prior to treatment. The test could be used, however, to monitor the success of therapy due to the observation that the parasites are largely cleared from circulation following successful therapy. Despite these limitations, the PCR based test described in this report exhibits sensitivity of one parasite equivalents or a single infected cell in 8 mls of blood, as demonstrated by spiking control experiments. Our attempts to develop a true second diagnostic primer set for *Leishmania* species was generally unsuccessful.

The progress of this work has been reported to the *Leishmania* working group and the COR in 15 reports and various memoranda (reporting results of sample analyses). One manuscript detailing the application of this technology for the detection and diagnosis of Leishmanial infections has been submitted for publication (Appendix II).

## 5. Bibliography

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## 6. Appendix I: List of *Leishmania* specimens tested

SRA Technologies has developed an in-house Relational Laboratory Information Manage (RLIMS), running in Oracle under UNIX, that is used to index and archive all patient information. This information includes patient ID numbers, sample type, date of r tested done, primers/probes used, date of analysis, interpretation of the test resu diagnostic report. As per the request of the *Leishmania* working group, all *Leishmani* data (both clinical as well as research) has been entered into our RLIMS system. He printout of all the *Leishmania* specimens analyzed by PCR during the course of this

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PCR Assay Results: LM  
Probe JW 14

Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube #	Tube #	Int	Comments	Final Result
11221	GATES, JOHN	-267-64-7560	BL 04-FEB-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11346	COLWELL, ROBERT	20-333-60-5644	BM 11-FEB-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11347	COLWELL, ROBERT	20-333-60-5644	BL 11-FEB-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11480	OGDEN, RUSSEL W	20-467-45-9394	BL 20-FEB-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11480.A	OGDEN, RUSSEL W	20-467-45-9394	BM 20-FEB-92	LM	90006	26-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11481	MORRIS, TABITHA	20-491-78-6750	BL 20-FEB-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11481.A	MORRIS, TABITHA	20-491-78-6750	BM 20-FEB-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11618	PATIENT #1 03-MAR-92, LE -	-	BL 03-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11619	PATIENT #2 03-MAR-92, LE -	-	BL 03-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11620	PATIENT #3 03-MAR-92, LE -	-	BL 03-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11621	PATIENT #4 03-MAR-92, LE -	-	BL 03-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11683	SMITH, HERBERT J	20-264-56-5136	BL 05-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11684	SERGOTT, PATRICK J	20-355-60-6724	BL 05-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11685	SMITH, HERBERT J	20-264-56-5136	BM 05-MAR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11686	SERGOTT, PATRICK J	20-355-60-6724	BM 05-MAR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11829	PATIENT #1 12-MAR-92, LE -	-	BM 12-MAR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11830	PATIENT #2 12-MAR-92, LE -	-	BL 12-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11831	PATIENT #3 12-MAR-92, LE -	-	BL 12-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11970	KAPPLAN, LEISHMANIA	-	BL 19-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11971	KAPPLAN, LEISHMANIA	-	BM 19-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11972	PATIENT #2 19-MAR-92, LE -	-	BL 19-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11973	SANTATERRARA, LEISHMANIA	-	BM 19-MAR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
11974	PATIENT #3 19-MAR-92, LE -	-	BL 19-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
12083	ROBERTS, MICHAEL J	-009-50-3733	BL 30-MAR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE

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PCR Assay Results: LM  
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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments	Final Result
12129	AMBORGI,	-	BM 01-APR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12130	ROBERTS, MICHAEL J	-009-50-3733	BM 01-APR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12131	PATIENT #1 01-APR-92, LE -		BL 01-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12153	PATIENT #2 03-APR-92, LE -		BL 03-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12154	RILEY, SYLVIA	20-220-74-4985	BM 03-APR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12155	BATCHELDER, SHAWN	20-595-62-7906	BM 03-APR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12156	PATIENT #1 03-APR-92, LE -		BL 03-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12272	PATIENT #1 10-APR-92, LI -		BL 10-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12273	PATIENT #2 10-APR-92, LE -		BL 10-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12343	PATIENT #_ 14-APR-92, LE -		BL 14-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12379	PATIENT #1 15-APR-92, LE -		BL 15-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12380	PIRKEY, JASON	20-461-77-7490	BL 15-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12381	PIRKEY, JASON	20-461-77-7490	BM 15-APR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12403	PATIENT 17-APR-92, LEISH -		BL 17-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12404	PATIENT 17-APR-92, LEISH -		BM 17-APR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12461	PATIENT #B1 20-APR-92, L -		BL 20-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12482	PATIENT 20-APR-92, LEISH -		BM 20-APR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12522	DARLING, RALPH	20-324-40-5525	BL 21-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12565	PATIENT #1 23-APR-92, LE -		BL 23-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12566	PATIENT #1 23-APR-92, LE -		BM 23-APR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12607	PATIENT #2 27-APR-92, LE -		BL 27-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12608	PATIENT #1 27-APR-92, LE -		BM 27-APR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
12668	PATIENT 30-APR-92, LEISH -		BL 30-APR-92	LM	90006	15-MAY-92	LEISHMANIA JW 11/12	JW 11/12	+	+	RE		POSITIVE
12669	PATIENT 30-APR-92, LEISH -		BM 30-APR-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12	JW 11/12	+	+	RE		POSITIVE

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PCR Assay Results: LM  
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Spec ID	Patient Name	FPC + SSN	Spec Received		Study	Panel	Assay Date	Virus	Primer	Tube		Comments	Final Result
			Type	Date						# 1	# 2		
12723	PATIENT #1 04-MAY-92, LE	-	BM	04-MAY-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
12724	PATIENT #2 04-MAY-92, LE	-	BL	04-MAY-92	LM	90006	22-MAY-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
12725	PATIENT #3 04-MAY-92, LE	-	BM	04-MAY-92	LM	90006	25-MAY-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
12726	PATIENT #4 04-MAY-92, LE	-	BL	04-MAY-92	LM	90006	22-MAY-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
12780	PATIENT 05-MAY-92, LEISH	-	BM	05-MAY-92	LM	90006	22-MAY-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
12781	PATIENT 05-MAY-92, LEISH	-	BL	05-MAY-92	LM	90006	22-MAY-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
12928	STONE, LEISHMANIA	-	BL	12-MAY-92	LM	90006	22-MAY-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13403	701, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		+	-	RE	POSITIVE
13404	702, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13405	711, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13406	712, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13407	713, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13408	718, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13409	725, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13410	729, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13411	738, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		+	-	IND	NEGATIVE
13412	740, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13413	761, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13414	767, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13415	768, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13416	778, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
13417	779, LEISHMANIA	-	BL	08-JUN-92	LM	90007	10-JUN-92	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE

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PCR Assay Results: LM  
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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments	Final Result
13418	780, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13419	789, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13420	790, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13421	795, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13422	796, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13423	803, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13424	806, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13425	807, LEISHMANIA	-	BL 08-JUN-92	LM	90007 09-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
					90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13426	815, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13427	816, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13428	817, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13429	955, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13430	960, LEISHMANIA	-	BL 08-JUN-92	LM	90007 24-JUL-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
					90007 09-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13431	962, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13432	963, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13433	967, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13434	1004, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13435	1008, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13436	1012, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13437	1013, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13438	1020, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13439	1025, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments	Final Result
13440	1026, LEISHMANIA	-	BL 08-JUN-92	LM	90007 24-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
					90007 10-JUN-92	LEISHMANIA JW 11/12		+	-	IND		NEGATIVE
					90007 09-JUL-92	LEISHMANIA JW 11/12		+	-	IND		NEGATIVE
13441	1033, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13442	1037, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13443	1038, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13444	1045, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13445	1051, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13446	1055, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13447	1058, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13448	1064, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13449	1073, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13450	1076, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13451	1089, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13452	1092, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13453	1095, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
13454	1098, LEISHMANIA	-	BL 08-JUN-92	LM	90007 10-JUN-92	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
23573	LAROCHE,	-	BL 07-JUN-93	LM	90008 08-JUN-93	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
23574	HENDRICK, PETER	-	BL 07-JUN-93	LM	90008 08-JUN-93	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
23575	PATIENT #1 07-JUN-93,	-	BL 07-JUN-93	LM	90008 08-JUN-93	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
23576	PATIENT #2 07-JUN-93,	-	BM 07-JUN-93	LM	90008 08-JUN-93	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
23677	CHIPLEY, JOSHUA W	20-564-33-6887	BL 11-JUN-93	LM	90008 15-JUN-93	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
23678	CHIPLEY, JOSHUA W	20-564-33-6887	BL 11-JUN-93	LM	90008 15-JUN-93	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
Z000501	31601,	-	BL 09-JUN-93	LM	90008 15-JUN-93	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
Z000502	31601,	-	BM 09-JUN-93	LM	90008 15-JUN-93	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE

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Spec ID Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube Tube # 1 # 2	Int	Comments	Final Result
Z000503 31621,	-	BL 11-JUN-93	LM	90008 15-JUN-93	LEISHMANIA JW 11/12		+	+	RE	POSITIVE
Z000504 31622,	-	BL 14-JUN-93	LM	90008 15-JUN-93	LEISHMANIA JW 11/12		+	+	RE	POSITIVE
Z000505 31623,	-	BL 11-JUN-93	LM	90008 15-JUN-93	LEISHMANIA JW 11/12		+	+	RE	POSITIVE
Z000506 31624,	-	BL 11-JUN-93	LM	90008 15-JUN-93	LEISHMANIA JW 11/12		+	+	RE	POSITIVE
Z000507 CHIPLEY, JOSHUA W	20-564-33-6887	TE 11-JUN-93	LM	90008 15-JUN-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000508 CHIPLEY, JOSHUA W	20-564-33-6887	TE 11-JUN-93	LM	90008 15-JUN-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
26642 54F,	-	HL 25-OCT-93	LM	90010 29-OCT-93	LEISHMANIA JW 11/12		+	+	RE	POSITIVE
26643 65F,	-	BL 25-OCT-93	LM	90010 29-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
26644 71F,	-	BL 25-OCT-93	LM	90010 29-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
26645 72F,	-	BL 25-OCT-93	LM	90010 29-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
26646 73/74F,	-	BL 25-OCT-93	LM	90010 29-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
26647 77F,	-	BL 25-OCT-93	LM	90010 29-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
26648 102F,	-	BL 25-OCT-93	LM	90010 29-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
26716 VAUGHAN, GEORGE	20-543-62-6961	OT 27-OCT-93	LM	90010 29-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000692 328710,	-	BL 14-OCT-93	LM	90010 22-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000693 328711,	-	BL 14-OCT-93	LM	90010 22-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000694 328712,	-	BL 14-OCT-93	LM	90010 22-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000695 32871,	-	BL 14-OCT-93	LM	90010 22-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000696 32872,	-	BL 14-OCT-93	LM	90010 22-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000697 32873,	-	BL 14-OCT-93	LM	90010 22-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000698 32874,	-	BL 14-OCT-93	LM	90010 22-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000699 32875,	-	BL 14-OCT-93	LM	90010 22-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000704 32876,	-	BL 14-OCT-93	LM	90010 22-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000705 32877,	-	BL 14-OCT-93	LM	90010 22-OCT-93	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments	Final Result
Z000706	32878,	-	BL 14-OCT-93	LM	90010	22-OCT-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000707	32879,	-	BL 14-OCT-93	LM	90010	22-OCT-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000708	BACHMAN, JOHN	20-205-42-4875	TC 20-OCT-93	LM	90010	29-OCT-93	LEISHMANIA JW 11/12	+	+	RE		POSITIVE
Z000709	VAUGHAN, GEORGE	20-543-62-6961	BL 21-OCT-93	LM	90010	29-OCT-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000710	VAUGHAN, GEORGE	20-543-62-6961	BM 21-OCT-93	LM	90010	29-OCT-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000711	VAUGHAN, GEORGE	20-543-62-6961	BM 21-OCT-93	LM	90010	29-OCT-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
26879	NERONE, MARCUS A	20-257-17-3841	BL 03-NOV-93	LM	90011	08-NOV-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
26880	NERONE, MARCUS A	20-257-17-3841	BM 03-NOV-93	LM	90011	08-NOV-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000712	VAUGHAN, GEORGE	20-543-62-6961	LI 01-NOV-93	LM	90011	08-NOV-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
27156	BRANDES, RONALD	20-317-48-7871	BL 17-NOV-93	LM	90012	29-NOV-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
27157	BRANDES, RONALD	20-317-48-7871	BM 17-NOV-93	LM	90012	29-NOV-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
27165	VAUGHAN, GEORGE	20-543-62-6961	TC 18-NOV-93	LM	90012	29-NOV-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
27166	NERONE, MARCUS A	20-257-17-3841	BL 18-NOV-93	LM	90012	29-NOV-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000713	NERONE, MARCUS A	20-257-17-3841	TC 09-NOV-93	LM	90012	29-NOV-94	LEISHMANIA JW 11/12	+	-	IND		INDETERMIN
Z000714	BRANDES, RONALD	20-317-48-7871	TC 17-NOV-93	LM	90012	29-NOV-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000715	ELLIOTT, E	-	TC 17-NOV-93	LM	90012	29-NOV-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000716	ELLIOTT, E	-	TC 17-NOV-93	LM	90012	29-NOV-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000766	BRANDES, RONALD	20-317-48-7871	LM 23-NOV-93	LM	90012	02-DEC-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000767	BRANDES, RONALD	20-317-48-7871	LI 23-NOV-93	LM	90012	02-DEC-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000768	BRANDES, RONALD	20-317-48-7871	TC 23-NOV-93	LM	90012	02-DEC-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000769	BRANDES, RONALD	20-317-48-7871	TC 23-NOV-93	LM	90012	02-DEC-93	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
27882	HAYES, JANES	-380-80-7107	BL 21-JAN-94	LM	90013	01-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
27883	HAYES, JANES	-380-80-7107	BM 21-JAN-94	LM	90013	13-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
Z000771	40211,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE



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Spec ID	Patient Name	PFC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube #	Tube #	Int	Comments	Final Result
2000772	40212,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000773	40213,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000774	40214,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000775	40215,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000776	40216,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000777	40217,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000778	40218,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000779	40219,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000780	402110,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000781	402111,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000782	402112,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000783	402113,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000784	402114,	-	BL 21-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000785	ZUPEC, JEFFREY	-	BL 24-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000786	ZUPEC, JEFFREY	-	BL 24-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000787	HALLMAN, JAMES	-419-62-6827	LI 25-JAN-94	LM	90013	26-JAN-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
28479	RAYNER, GREGORY	-377-62-7801	BL 28-JAN-94	LM	90014	24-FEB-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
28480	RAYNER, GREGORY	-377-62-7801	BM 28-JAN-94	LM	90014	24-FEB-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
28976	SCHUENEMAN, MATTHEW D	-	BL 14-FEB-94	LM	90014	01-MAR-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
28977	SCHUENEMAN, MATTHEW D	-	BL 14-FEB-94	LM	90014	01-MAR-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
29034	HAYNESWORTH, WILLIE	-340-72-3179	BM 22-FEB-94	LM	90014	01-MAR-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
29141	LYNN, KENNY	-465-35-8434	OT 17-FEB-94	LM	90014	01-MAR-94	LEISHMANIA JW 11/12	+	+	NR		POSITIVE
29142	CRIBBS, JAMES	-262-29-5975	BM 17-FEB-94	LM	90014	01-MAR-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE
2000788	40261,	-	BL 27-JAN-94	LM	90014	24-FEB-94	LEISHMANIA JW 11/12	-	-	NR		NEGATIVE

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Spec ID Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date Virus	Primer	Tube Tube # 1 # 2	Int	Comments	Final Result
Z000789 40262,	-	BM 27-JAN-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000790 40271,	-	BM 28-JAN-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000791 40321,	-	TC 01-FEB-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000792 40331,	-	BL 02-FEB-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000793 40332,	-	BL 02-FEB-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000795 40341,	-	BL 04-FEB-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000796 40342,	-	BM 04-FEB-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000797 40343,	-	BM 04-FEB-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000798 BV4 DO,	-	SM 04-FEB-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	+	+	RE	POSITIVE
Z000799 BP1 DO,	-	SM 04-FEB-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000800 JH,	-	SM 04-FEB-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000801 B5 DO,	-	SM 04-FEB-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000802 A5 DO,	-	SM 04-FEB-94	LM	90014 24-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000820 WILLIAMS, THOMAS	-441-46-2127	OT 18-FEB-94	LM	90014 01-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000822 LYON, KENNY	-465-35-8434	OT 23-FEB-94	LM	90014 01-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
28852 WADDELL, DIRK	20-343-56-3223	OT 08-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
28876 40401,	-	BL 09-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
28877 40402,	-	BM 09-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
28910 LYON, KENNY	-465-35-8434	BL 10-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000803 40391,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000804 40392,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000805 40393,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000806 40394,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000807 40395,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE

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Spec ID Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date Virus	Primer	Tube Tube # 1 # 2	Int	Comments	Final Result
Z000808 40396,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000809 40397,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000810 40398,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000811 40399,	-	BL 07-FEB-94	LM	90015 14-APR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000812 403910,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000813 403911,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000814 403912,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000815 403913,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000816 403914,	-	BL 07-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
Z000817 40411,	-	OT 10-FEB-94	LM	90015 14-FEB-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29255 40551,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29256 40552,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29257 40553,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29258 40554,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29259 40555,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29260 40556,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29261 40557,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29262 40558,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29264 405510,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29265 405511,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29266 405512,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29267 405513,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29268 405514,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
29269 405515,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA JW 11/12	-	-	NR	NEGATIVE
								75% OF TOTAL VOLUME	NEGATIVE

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments	Final Result
29270	405516,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	70% OF TOTAL VOLUME	NEGATIVE
29271	405517,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	20% OF TOTAL VOLUME	NEGATIVE
29272	405518,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	31% OF TOTAL VOLUME	NEGATIVE
29273	405519,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	55% OF TOTAL VOLUME	NEGATIVE
29274	405520,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	27% OF TOTAL VOLUME	NEGATIVE
29275	405521,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	40% OF TOTAL VOLUME	NEGATIVE
29276	405522,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR		NEGATIVE
29277	405523,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	20% OF TOTAL VOLUME	NEGATIVE
29278	405524,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR		NEGATIVE
29279	405525,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	75% OF TOTAL VOLUME	NEGATIVE
29280	405526,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR		NEGATIVE
29281	405527,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR		NEGATIVE
29282	405528,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR		NEGATIVE
29283	405529,	-	BL 25-FEB-94	LM	90016 21-MAR-94	LEISHMANIA	JW 11/12	-	-	NR		NEGATIVE
29284	405530,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA	JW 11/12	-	-	NR		NEGATIVE
29285	405531,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA	JW 11/12	-	-	NR		NEGATIVE
29286	405532,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	25% OF TOTAL VOLUME	NEGATIVE
29287	405533,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	30% OF TOTAL VOLUME	NEGATIVE
29288	405534,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	50% OF TOTAL VOLUME	NEGATIVE
29289	405535,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA	JW 11/12	-	-	NR		NEGATIVE
29290	405536,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	40% OF TOTAL VOLUME	NEGATIVE
29291	405537,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	25% OF TOTAL VOLUME	NEGATIVE
29292	405538,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	40% OF TOTAL VOLUME	NEGATIVE
29293	405539,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA	JW 11/12	-	-	NR	45% OF TOTAL VOLUME	NEGATIVE

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29294	405540,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR	55% OF TOTAL VOLUME	NEGATIVE
29295	405541,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR	35% OF TOTAL VOLUME	NEGATIVE
29296	405542,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR	35% OF TOTAL VOLUME	NEGATIVE
29297	405543,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR	20% OF TOTAL VOLUME	NEGATIVE
29298	405544,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR	45% OF TOTAL VOLUME	NEGATIVE
29299	405545,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR	35% OF TOTAL VOLUME	NEGATIVE
29300	405546,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR	25% OF RTOTAL VOLUME	NEGATIVE
29301	405547,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29302	405548,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29303	405549,	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29304	MALDONADO, TONY	-	BL 25-FEB-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		+	+	RE		POSITIVE
29384	CHEPSERY, CHENNGETICH	-	OT 03-MAR-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29385	PORONJO, MARY	-	OT 04-MAR-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		+/-	+/-	RE		POSITIVE
29387	SAMOSN, GRACE	-	OT 04-MAR-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		+	+	RE		POSITIVE
29388	KIPKEMEI, CHEROP	-	OT 04-MAR-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		+	+	RE		POSITIVE
29389	BARTENJO, CHRISTINE	-	OT 04-MAR-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29390	KANDAGOR, PERIS	-	OT 04-MAR-94	LM	90016 24-MAR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29375	GOULD, MICHAEL	-227-74-3133	BM 04-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29386	GOULD, MICHAEL	-227-74-3133	BL 04-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29391	MAHER, JEROME	-361-42-2793	BL 04-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29392	MAHER, JEROME	-361-42-2793	BM 04-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29393	WOOD, STEVE W	-594-20-7800	BL 04-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29394	WOOD, STEVE W	-594-20-7800	BM 04-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29823	TOOLE, JAMES	-274-40-7928	BL 14-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments	Final Result
29824	TOOLE, JAMES	-274-40-7928	BL 14-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29897	WADDELL, DIRK	20-343-56-3223	BL 21-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29919	LIBERTY, SCHANEN	-450-47-5981	BL 22-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR	45% OF TOTAL VOLUME	NEGATIVE
29948	LIBERTY, SCHANEN	-450-47-5981	BM 22-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
29959	40831,	-	BL 25-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		+	+	RE	15% OF TOTAL VOLUME	POSITIVE
29960	40832,	-	BL 25-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		+	+	RE		POSITIVE
29961	40833,	-	BL 25-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR	50% OF TOTAL VOLUME	NEGATIVE
29962	40834,	-	BL 25-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR	5% OF TOTAL VOLUME	NEGATIVE
29985	SCHVERMAN, KRISTIE L	-569-53-0637	BL 29-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
30105	SCHVERMAN, KRISTIE L	-569-53-0637	BL 29-MAR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
30201	40901,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
30202	40902,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
30203	40903,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
30204	40904,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
30205	40905,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
30206	40906,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
30207	40908,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR	25% OF TOTAL VOLUME	NEGATIVE
30208	40908,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR	25% OF TOTAL VOLUME	NEGATIVE
30209	40909,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR	15% OF TOTAL VOLUME	NEGATIVE
30210	409010,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR	15% OF TOTAL VOLUME	NEGATIVE
30211	409011,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR	30% OF TOTAL VOLUME	NEGATIVE
30212	409012,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR	80% OF TOTAL VOLUME	NEGATIVE
30213	409013,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR	20% OF TOTAL VOLUME	NEGATIVE
30214	409014,	-	BL 01-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		-	-	NR	25% OF TOTAL VOLUME	NEGATIVE

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30263	PAULSEN, KIM	-571-35-8120	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30264	PAULSEN, KIM	-571-35-8120	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30265	CVC 39 EDTA,	-	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		+ +	RE		POSITIVE
30266	CVC 37 EDTA,	-	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30267	CVC 39 HEPARIN,	-	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR	5% OF TOTAL VOLUME	NEGATIVE
30268	CVC 40 HEPARIN,	-	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR	20% OF TOTAL VOLUME	NEGATIVE
30269	CVC 37 HEPARIN,	-	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR	10% OF TOTAL VOLUME	NEGATIVE
30270	CVC 40 EDTA,	-	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30271	CVC 36 HEPARIN,	-	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR	10% OF TOTAL VOLUME	NEGATIVE
30272	CVC 34 HEPARIN,	-	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30273	CVC 36 EDTA,	-	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30274	CVC 34 EDTA,	-	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30289	BALOGH, STEPHEN	-160-58-7391	BL 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30290	BALOGH, STEPHEN	-160-58-7391	BM 06-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30423	40981,	-	BL 08-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		+ +	RE		POSITIVE
30424	40982,	-	BL 08-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		+ +	RE		POSITIVE
30425	KRAMER, GARY	-178-42-7910	BL 08-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30450	NORTHEY, DUWAYNE F	20-395-84-5069	BL 13-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30451	NORTHEY, DUWAYNE F	20-395-84-5069	BM 13-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30467	STECKBECK, DEAN	20-179-54-7414	LI 13-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30468	CHOVERI, ROY	20-215-70-5824	BL 13-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
30469	CHOVERI, ROY	20-215-70-5824	BM 13-APR-94	LM	90017 19-APR-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
28911	LYON, KENNY	-465-35-8434	BM 10-FEB-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE
29033	HAYNESWORTH, WILLIE	-340-72-3179	BL 22-FEB-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		- -	NR		NEGATIVE

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube Tube # 1 # 2	Int	Comments	Final Result
29263	40559,	-	BL 25-FEB-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
30621	LATHAM, TRAVIS	20-006-82-9838	SK 19-APR-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		+	+	RE	POSITIVE
30622	CROFT, JOSHUA	20-402-08-9845	SK 20-APR-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		+	+	RE	POSITIVE
30660	BOWLES, HERBERT	20-138-50-6441	LI 19-APR-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
30802	41161,	-	BL 26-APR-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		+	+	RE	POSITIVE
30803	41162,	-	BL 26-APR-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		+	+	RE	POSITIVE
30804	41163,	-	BL 26-APR-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		+	+	RE	POSITIVE
30805	41164,	-	BL 26-APR-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
30806	PLUMMER, SCOTT	20-018-48-7159	SK 26-APR-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		+	+	RE	POSITIVE
Z000795	40341,	-	BL 04-FEB-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
Z000821	KAPLAN, BARRY	20-206-52-6668	LN 18-FEB-94	LM	90018 02-MAY-94	LEISHMANIA JW 11/12		-	-	NR	NEGATIVE
30911	41221,	-	BL 02-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		+	+	RE	POSITIVE
30912	41222,	-	BL 02-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		+	+	RE	POSITIVE
30913	41223,	-	BL 02-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		-	-	NR	NEGATIVE
30914	41224,	-	BL 02-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		-	-	NR	NEGATIVE
30915	41225,	-	BL 02-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		+	+	RE	POSITIVE
30916	41226,	-	BL 02-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		+	+	RE	POSITIVE
30917	41227,	-	BL 02-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		+	+	RE	POSITIVE
30918	41228,	-	BL 02-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		-	-	NR	NEGATIVE
30919	41229,	-	BL 02-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		-	-	NR	NEGATIVE
30920	412210,	-	BL 02-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		+	+	RE	POSITIVE
30959	PLUMMER, SCOTT	20-018-48-7159	SK 05-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 111/121		+	+	RE	POSITIVE
30990	41261,	20-	BL 06-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		-	-	NR	NEGATIVE
30991	41262,	20-	BL 06-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 111/121		+	+	RE	POSITIVE



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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube Tube		Int	Comments	Final Result
								# 1	# 2			
30992	41263,	20-	BL 06-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
30993	41264,	20-	BL 06-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
30994	41265,	20-	BL 06-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE	SEE REPORT	POSITIVE
31015	BOYLE, SEAN P	20-226-19-1869	BL 08-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	SEE REPORT	NEGATIVE
31016	BOYLE, SEAN P	20-226-19-1869	BM 08-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	SEE REPORT	NEGATIVE
31017	SANTAFERRARA, JAMES P	20-057-50-1286	SP 08-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31018	SANTAFERRARA, JAMES P	20-057-50-1286	SP 08-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31019	BACHMAN, JOHN	20-205-42-4875	LN 10-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31047	ABDALLAH, BASSAM K	20-	SK 11-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	SEE REPORT	NEGATIVE
31048	LOCKETT, NORMA	20-450-53-3473	BL 11-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	ND	SEE REPORT	NON-DIAG
31049	LOCKETT, NORMA	20-450-53-3473	BM 11-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	ND	SEE REPORT	NON-DIAG
31051	41301,	20-	BL 10-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	30% OF SUGG. NUMBER	NEGATIVE
31052	41302,	20-	BL 10-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
31053	CROSSMAN, STEWART	20-025-48-6417	BL 10-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31054	CROSSMAN, STEWART	20-025-48-6417	BM 10-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31085	BOYLE, SEAN P	20-226-19-1869	LN 16-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31356	WILLIAM, FRADY D	-239-37-0026	BL 20-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31357	WILLIAM, FRADY D	-239-37-0026	BM 20-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31379	41401,	-	BL 23-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
31380	41402,	-	BL 23-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
31381	41404,	-	BL 23-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31382	41405,	-	BL 23-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31505	CHIPLEY, JOSHUA W	20-564-33-6887	BL 31-MAY-94	LM	90019 12-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31506	CHIPLEY, JOSHUA W	20-564-33-6887	BM 31-MAY-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE

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PCR Assay Results: LM  
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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube Tube # 1 # 2	Int	Comments	Final Result
31529	MALLOY, VICTOR	20-308-60-0996	BL 01-JUN-94	LM	90019 12-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
31530	MALLOY, VICTOR	20-308-60-0996	BM 02-JUN-94	LM	90019 12-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
31553	COSNER, BRUCE	-	BM 02-JUN-94	LM	90019 12-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
31554	CHIPLEY, JOSHUA W	20-564-33-6887	SK 02-JUN-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
31731	MARTINEZ, ARGUELIO	-581-06-2752	BM 08-JUN-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
31749	HAMDEN, CHARLES	-381-58-4162	BL 09-JUN-94	LM	90019 12-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
31750	HAMDEN, CHARLES	-381-58-4162	BM 09-JUN-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
31751	JEMIOLA, RICHARD	-156-40-2576	LI 09-JUN-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
31797	MAZUR, JOACHIM	-416-86-2154	BL 16-JUN-94	LM	90019 08-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
29033	HAYNESWORTH, WILLIE	-340-72-3179	BL 23-FEB-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
30802	41161,	-	BL 26-APR-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE	POSITIVE
30803	41162,	-	BL 26-APR-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE	POSITIVE
30804	41163,	-	BL 26-APR-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE	POSITIVE
30806	PLUMMER, SCOTT	20-018-48-7159	SK 26-APR-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE	POSITIVE
30995	41266,	20-	BL 06-MAY-94	LM	90020 01-AUG-94	LEISHMANIA JW 11i/12i		+	+	RE	POSITIVE
31753	TAYLOR, JAMES	-512-82-7559	LI 10-JUN-94	LM	90020 01-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
32325	54F,	-	BL 13-JUL-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
32326	53F,	-	BL 13-JUL-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
32350	ZUPEC, JEFFREY	-	BM 12-JUL-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
32351	GEIGER, MITCH	-529-63-0706	SK 13-JUL-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
32352	GEIGER, MITCH	-529-63-0706	BL 13-JUL-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
32354	PERDUE, JAMES	-256-92-2772	BL 13-JUL-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
32376	419433,	-	SBL 13-JUL-94	LM	90020 01-AUG-94	LEISHMANIA JW 11i/12i		+	-	IND	INDETERMIN
32377	419432,	-	SBL 13-JUL-94	LM	90020 01-AUG-94	LEISHMANIA JW 11i/12i		+	-	IND	INDETERMIN

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube Tube # 1 # 2		Int	Comments	Final Result
32378	419435,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	+	+	RE		POSITIVE
32379	419431,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	-	-	NR		NEGATIVE
32380	419436,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	-	-	NR		NEGATIVE
32380	419436,	-	SBL 13-JUL-94	LM	90020	05-AUG-94	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
32381	419434,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	-	-	NR		NEGATIVE
32381	419434,	-	SBL 13-JUL-94	LM	90020	05-AUG-94	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
32382	419430,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	+	+	RE		POSITIVE
32383	419429,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	-	-	NR		NEGATIVE
32383	419429,	-	SBL 13-JUL-94	LM	90020	05-AUG-94	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
32384	419428,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	-	-	NR		NEGATIVE
32384	419428,	-	SBL 13-JUL-94	LM	90020	05-AUG-94	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
32385	419427,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	-	-	NR		NEGATIVE
32385	419427,	-	SBL 13-JUL-94	LM	90020	05-AUG-94	LEISHMANIA JW 11/12	JW 11/12	+	+	RE		POSITIVE
32386	419426,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	-	-	NR		NEGATIVE
32386	419426,	-	SBL 13-JUL-94	LM	90020	05-AUG-94	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
32387	419425,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	-	-	NR		NEGATIVE
32387	419425,	-	SBL 13-JUL-94	LM	90020	05-AUG-94	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
32388	419423,	-	SBL 13-JUL-94	LM	90020	01-AUG-94	LEISHMANIA JW 11i/12i	JW 11i/12i	+	-	IND		INDETERMIN
32389	419422,	-	SBL 13-JUL-94	LM	90020	01-AUG-94	LEISHMANIA JW 11i/12i	JW 11i/12i	+	+	RE		POSITIVE
32390	419424,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	-	-	NR		NEGATIVE
32390	419424,	-	SBL 13-JUL-94	LM	90020	05-AUG-94	LEISHMANIA JW 11/12	JW 11/12	-	-	NR		NEGATIVE
32391	419421,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	-	-	NR		NEGATIVE
32391	419421,	-	SBL 13-JUL-94	LM	90020	05-AUG-94	LEISHMANIA JW 11/12	JW 11/12	+	+	RE		POSITIVE
32392	419419,	-	SBL 13-JUL-94	LM	90020	27-JUL-94	LEISHMANIA JW 11i/12i	JW 11i/12i	-	-	NR		NEGATIVE

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Spec ID	Patient Name	PPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube #	Tube # 2	Int	Comments	Final Result
32392	419419,	-	SBL 13-JUL-94	LM	90020 05-AUG-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
32393	419420,	-	SBL 13-JUL-94	LM	90020 27-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32394	41941,	-	SCU 13-JUL-94	LM	90020 27-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32394	41941,	-	SCU 13-JUL-94	LM	90020 05-AUG-94	LEISHMANIA JW 11/12		+	+	RE		POSITIVE
32395	41942,	-	SCU 13-JUL-94	LM	90020 27-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
32396	41943,	-	SCU 13-JUL-94	LM	90020 27-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
32397	41944,	-	SCU 13-JUL-94	LM	90020 01-AUG-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
32398	41945,	-	SCU 13-JUL-94	LM	90020 27-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
32399	41946,	-	SCU 13-JUL-94	LM	90020 27-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32399	41946,	-	SCU 13-JUL-94	LM	90020 05-AUG-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
32400	41948,	-	SCU 13-JUL-94	LM	90020 05-AUG-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
32400	41948,	-	SCU 13-JUL-94	LM	90020 01-AUG-94	LEISHMANIA JW 11i/12i		+	-	IND		INDETERMIN
32501	41948,	-	SCU 13-JUL-94	LM	90020 27-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
32502	41949,	-	SCU 13-JUL-94	LM	90020 27-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
32503	419410,	-	SCU 13-JUL-94	LM	90020 27-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
32504	419411,	-	SCU 13-JUL-94	LM	90020 01-AUG-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
32505	419412,	-	SCU 13-JUL-94	LM	90020 01-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32505	419412,	-	SCU 13-JUL-94	LM	90020 05-AUG-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
32506	419413,	-	SCU 13-JUL-94	LM	90020 01-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32506	419413,	-	SCU 13-JUL-94	LM	90020 05-AUG-94	LEISHMANIA JW 11/12		-	-	NR		NEGATIVE
32507	419414,	-	SCU 13-JUL-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
32508	419415,	-	SCU 13-JUL-94	LM	90020 01-AUG-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
32509	419416,	-	SCU 13-JUL-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
32510	419417,	-	SCU 13-JUL-94	LM	90020 28-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube		Int	Comments	Final Result
									# 1	# 2			
32511	419418,	-	SCU 13-JUL-94	LM	90020	28-JUL-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
2000795	40341,	-	BL 04-FEB-94	LM	90020	28-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
2000821	KAPPLAN, BARRY	20-206-52-6668	LN 18-FEB-94	LM	90020	28-JUL-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
28911	LYON, KENNY	-465-35-8434	BM 10-FEB-94	LM	90021	05-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
30805	41164,	-	BL 26-APR-94	LM	90021	05-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31796	MAZUR, JOACHIM	-416-86-2154	LN 16-JUN-94	LM	90021	05-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31841	FRANKS, JOHNNIE	-509-82-2357	LN 22-JUN-94	LM	90021	05-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31854	SMITH, HERBERT J	20-264-56-5136	BM 23-JUN-94	LM	90021	05-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31943	MCKEE, THEODORE	-473-72-0140	BL 28-JUN-94	LM	90021	05-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31944	MCKEE, THEODORE	-473-72-0140	BM 28-JUN-94	LM	90021	05-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31945	FRANKS, JOHNNIE	-509-82-2357	BL 28-JUN-94	LM	90021	05-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
31946	FRANKS, JOHNNIE	-509-82-2357	BM 28-JUN-94	LM	90021	05-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32349	ZUPEC, JEFFREY	-	BL 12-JUL-94	LM	90021	05-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32353	PERDUE, JAMES	-256-92-2772	SK 13-JUL-94	LM	90021	05-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32869	COOKE, THOMAS	-101-46-8509	LI 03-AUG-94	LM	90022	18-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32993	NORTHEY, DUWAYNE F	20-395-84-5069	BL 12-AUG-94	LM	90022	18-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32994	MARTEN, JOSEPH	-043-48-9687	BL 11-AUG-94	LM	90022	18-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32995	MARTEN, JOSEPH	-043-48-9687	BM 11-AUG-94	LM	90022	18-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32996	EDWARD, JAMES	-158-50-4154	BL 11-AUG-94	LM	90022	18-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32997	EDWARD, JAMES	-158-50-4154	LI 11-AUG-94	LM	90022	18-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32998	HOVNAN, MATTHEW	-209-58-7439	BL 11-AUG-94	LM	90022	18-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
32999	ROVNAN, MATTHEW	-209-58-7439	SK 11-AUG-94	LM	90022	18-AUG-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
33000	ROVNAN, MATTHEW	-209-58-7439	ASP 11-AUG-94	LM	90022	18-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR	1.5% OF TOTAL VOLUME	NEGATIVE
33101	NORTHEY, DUWAYNE F	20-395-84-5069	LI 12-AUG-94	LM	90022	18-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments	Final Result
33111	ROVNAN, MATTHEW	-209-58-7439	ASP 17-AUG-94	LM	90023	25-AUG-94	LEISHMANIA JW 11i/12i		-	-	NR	20% OF TOTAL VOLUME	NEGATIVE
33193	RITTER, BARBARA K	-404-60-5363	BL 25-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33194	RITTER, BARBARA K	-404-60-5363	BM 25-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33195	LALITA, DEVI	-	BL 25-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR	ABL-C-19	NEGATIVE
33196	RAKESH, KV	-	BL 25-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		+	+	RE	ABL-C-018	POSITIVE
33197	RITTER, BARBARA K	-404-60-5363	LI 25-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33198	42381,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33199	42382,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33200	42383,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33301	42384,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33302	42385,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33303	42386,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33304	42387,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33305	42388,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33306	42389,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33307	423810,	-	BL 26-AUG-94	LM	90024	19-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33308	423811,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33309	423812,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33310	423813,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33311	423814,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33312	423815,	-	BL 26-AUG-94	LM	90024	19-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33313	423816,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33314	423817,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33315	423818,	-	BL 26-AUG-94	LM	90024	19-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube #	Tube #	Int	Comments	Final Result
33316	423819,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33317	423820,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33318	423821,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33319	423822,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33320	423823,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33321	423824,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33322	423825,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33323	423826,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33324	423827,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33325	423828,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33326	423829,	-	BL 26-AUG-94	LM	90024	19-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33327	423830,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33328	423831,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33329	423832,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33330	423833,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33331	423834,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33332	423835,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33333	423836,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33334	423837,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33335	423838,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33336	423839,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33337	423840,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33338	423841,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33339	423842,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE

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33340	423843,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33341	423844,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33342	423845,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33343	423846,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33344	423847,	-	BL 26-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33409	BACHMAN, JOHN	20-205-42-4875	CO 31-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33411	HORNER, BRENT A	-440-70-8754	BL 31-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33412	HORNER, BRENT A	-440-70-8754	LI 31-AUG-94	LM	90024	13-SEP-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33616	425202,	-	BL 09-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
33617	425203,	-	BL 09-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33618	425204,	-	BL 09-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
33619	425205,	-	BL 09-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
33620	425206,	-	BL 09-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
33621	JOHNSON, JANET L	-417-80-7607	BL 09-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33622	JOHNSON, JANET L	-417-80-7607	BM 09-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33649	42551,	-	BL 12-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
33650	42552,	-	BL 12-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
33673	PRIEM, RICHARD G	-452-88-8338	BL 13-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33728	MARABLE, GARY L	-254-51-6352	BL 16-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33729	MARABLE, GARY L	-254-51-6352	BL 16-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		+	+	RE		POSITIVE
33733	HUMPHREY, MARK	20-339-68-9001	BL 19-SEP-94	RV21 IIB	90025	06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33744	426201,	-	BL 19-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33745	426202,	-	BL 19-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33746	426203,	-	BL 19-SEP-94	LM	90025	06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE



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33747	426204,	-	BL 19-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33748	426205,	-	BL 19-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33749	426206,	-	BL 19-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33750	426207,	-	BL 19-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33752	426209,	-	BL 19-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33754	426211,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33755	426212,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33757	426214,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33758	426215,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33759	426216,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33760	426217,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33761	426218,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33762	426219,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33763	426220,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33764	426221,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33765	426222,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33766	426223,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33767	426224,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33768	426225,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33769	426226,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33770	426227,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33771	426228,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33772	426229,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE
33773	426230,	-	BL 16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR		NEGATIVE

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			Type Date						# 1	# 2		
33774	426231,	-	BL	16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
33775	426232,	-	BL	16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
33776	426233,	-	BL	16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
33777	426234,	-	BL	16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
33778	426235,	-	BL	16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
33779	426236,	-	BL	16-SEP-94	LM	90025 06-OCT-94	LEISHMANIA JW 11i/12i		-	-	NR	NEGATIVE
Spec ID	Patient Name	FPC + SSN	Type Date	Study	Panel Assay Date	Virus	Primer	Tube Tube	# 1	# 2	Int	Comments
20027	BACHMAN, JOHN	20-205-42-4875	BL 13-JAN-93	LM	90009 03-FEB-92	LEISHMANIA JW 11/12		-	-	-	NR	
20028	BACHMAN, JOHN	20-205-42-4875	BM 13-JAN-93	LM	90009 03-FEB-93	LEISHMANIA JW 11/12		-	-	-	NR	
20278	CLARK, ALVIN	20-249-13-9659	BL 26-JAN-93	LM	90009 03-FEB-93	LEISHMANIA JW 11/12		-	-	-	NR	
20279	CLARK, ALVIN	20-249-13-9659	BM 26-JAN-93	LM	90009 03-FEB-93	LEISHMANIA JW 11/12		-	-	-	NR	
20280	RICO, JUAN N	20-447-40-4827	BL 28-JAN-93	LM	90009 03-FEB-93	LEISHMANIA JW 11/12		-	-	-	NR	
20281	RICO, JUAN N	20-447-40-4827	BM 26-JAN-93	LM	90009 03-FEB-93	LEISHMANIA JW 11/12		-	-	-	NR	
20344	HAMMACK, WENDELL	20-427-49-8157	BL 27-JAN-93	LM	90009 03-FEB-93	LEISHMANIA JW 11/12		-	+	-	IND	
20345	HAMMACK, WENDELL	20-427-49-8157	BM 27-JAN-93	LM	90009 03-FEB-93	LEISHMANIA JW 11/12		-	-	-	IND	
20366	DUNSON, DAVID	20-250-53-3477	BL 28-JAN-93	LM	90009 03-FEB-93	LEISHMANIA JW 11/12		-	-	-	NR	
20367	DUNSON, DAVID	20-250-53-3477	BM 28-JAN-93	LM	90009 03-FEB-93	LEISHMANIA JW 11/12		-	-	-	NR	
20401	GOODMAN, JONH J	20-187-50-9316	BL 01-FEB-93	LM	90009 19-FEB-93	LEISHMANIA JW 11/12		-	-	-	NR	
20402	GOODMAN, JONH J	20-187-50-9316	BM 01-FEB-93	LM	90009 19-FEB-93	LEISHMANIA JW 11/12		-	-	-	NR	
21243	HAMMACK, WENDELL	20-427-49-8157	BL 03-MAR-93	LM	90009 09-MAR-93	LEISHMANIA JW 11/12		-	-	-	NR	
21244	HAMMACK, WENDELL	20-427-49-8157	BM 03-MAR-93	LM	90009 09-MAR-93	LEISHMANIA JW 11/12		-	-	-	NR	
21459	REIGLE, KERRY J	20-180-48-6847	BL 10-MAR-93	LM	90009 15-MAR-93	LEISHMANIA JW 11/12		-	-	-	NR	
21460	REIGLE, KERRY J	20-180-48-6847	BM 10-MAR-93	LM	90009 15-MAR-93	LEISHMANIA JW 11/12		-	-	-	NR	

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21551	SCHONEBOOM, BRAD L	20-367-76-1421	BL 15-MAR-93	LM	90009	25-MAR-93	LEISHMANIA JW 11/12	-	-	NR	
21551	SCHONEBOOM, BRAD L	20-367-76-1421	BL 15-MAR-93	LM	90009	05-APR-93	LEISHMANIA JW 11/12	-	-	NR	
21552	SCHONEBOOM, BRAD L	20-367-76-1421	BM 15-MAR-93	LM	90009	25-MAR-93	LEISHMANIA JW 11/12	-	-	NR	
21552	SCHONEBOOM, BRAD L	20-367-76-1421	BM 15-MAR-93	LM	90009	05-APR-93	LEISHMANIA JW 11/12	+	+	RE	
22756	WILSON, PHILLIP R	20-246-72-7869	BL 05-MAY-93	RV2	90009	13-MAY-93	LEISHMANIA JW 11/12	+	-	IND	
22955	DARBY, GREGORY S	20-505-06-2923	BL 12-MAY-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	-	+/-	IND	+REP
23056	WADDELL, DIRK	20-343-56-3223	BM 18-MAY-93	LM	90009	20-MAY-93	LEISHMANIA JW 11/12	-	-	NR	
23250	CHIPLEY, JOSHUA W	20-564-33-6887	BL 21-MAY-93	LM	90009	01-JUL-93	LEISHMANIA JW 11/12	-	-	NR	
23250	CHIPLEY, JOSHUA W	20-564-33-6887	BL 21-MAY-93	LM	90009	25-MAY-93	LEISHMANIA JW 11/12	+	+	RE	
23251	JOHNSON, ROBERT	-	BL 21-MAY-93	LM	90009	01-JUL-93	LEISHMANIA JW 11/12	-	-	NR	
23251	JOHNSON, ROBERT	-	BL 21-MAY-93	LM	90009	25-MAY-93	LEISHMANIA JW 11/12	-	-	NR	
23324	MYKUT, STEVEN	-	BL 26-MAY-93	LM	90009	27-MAY-93	LEISHMANIA JW 11/12	-	-	NR	
23328	J4,	-	BL 26-MAY-93	LM	90009	27-MAY-93	LEISHMANIA JW 11/12	+	+	RE	
23328	J4,	-	BL 26-MAY-93	LM	90009	30-MAY-93	LEISHMANIA JW 11/12	*	-	IND	
23328	J4,	-	BL 26-MAY-93	LM	90009	01-JUL-93	LEISHMANIA JW 11/12	-	-	NR	
23328	J4,	-	BL 26-MAY-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	-	-	NR	+REP
23328	J4,	-	BL 26-MAY-93	LM	90009	27-MAY-93	LEISHMANIA JW 11/12	+/-	-	IND	
23328	J4,	-	BL 26-MAY-93	LM	90009	30-MAY-93	LEISHMANIA JW 11/12	*	-	IND	
23344	GHEBREMESCHEL, TADDE	20-049-34-1541	BL 27-MAY-93	LM	90009	01-JUL-93	LEISHMANIA JW 11/12	-	-	NR	
23344	GHEBREMESCHEL, TADDE	20-049-34-1541	BL 27-MAY-93	LM	90009	09-JUL-93	LEISHMANIA JW 11/12	-	-	NR	
23384	LILLY, SCOTT D	20-496-78-0235	SM 01-JUN-93	RV43	90009	02-JUL-93	LEISHMANIA JW 11/12	-	-	NR	
23384	LILLY, SCOTT D	20-496-78-0235	SM 01-JUN-93	RV43	90009	02-JUL-93	LEISHMANIA JW 11/12	-	-	NR	
23385	CRADDOCK, ANNETTE	30-455-02-0568	BL 01-JUN-93	RV21 IIB	90009	02-JUL-93	LEISHMANIA JW 11/12	-	-	NR	

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube #	Int	Comments
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23573	LAROCHE, -	-	BL 07-JUN-93	LM	90009	08-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23574	HENDRICK, PETER	-	BL 07-JUN-93	LM	90009	08-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23575	PATIENT #1 07-JUN-93	-	BL 07-JUN-93	LM	90009	08-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23576	PATIENT #2 07-JUN-93	-	BM 07-JUN-93	LM	90009	08-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23677	CHIPLEY, JOSHUA W	20-564-33-6887	BL 11-JUN-93	LM	90009	15-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23678	CHIPLEY, JOSHUA W	20-564-33-6887	BL 11-JUN-93	LM	90009	15-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23757	SMITH, TRACY L	-095-50-9074	BM 15-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23757	SMITH, TRACY L	-095-50-9074	BM 15-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
23758	SMITH, TRACY L	-095-50-9074	BL 15-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23758	SMITH, TRACY L	-095-50-9074	BL 15-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23758	SMITH, TRACY L	-095-50-9074	BL 15-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
23827	INGALLS, J	-056-48-8347	BL 17-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23827	INGALLS, J	-056-48-8347	BL 17-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	DIL_1:2
23828	INGALLS, J	-056-48-8347	BM 17-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23828	INGALLS, J	-056-48-8347	BM 17-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
23877	SIMON, MICHAEL	20-304-82-0936	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23877	SIMON, MICHAEL	20-304-82-0936	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
23878	SIMON, MICHAEL	20-304-82-0936	BM 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23878	SIMON, MICHAEL	20-304-82-0936	BM 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
23879	YOUNG, RYAN	20-027-68-3250	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23879	YOUNG, RYAN	20-027-68-3250	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
23879	YOUNG, RYAN	20-027-68-3250	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR
23879	YOUNG, RYAN	20-027-68-3250	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	DIL_1:10

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments
23879	YOUNG, RYAN	20-027-68-3250	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23879	YOUNG, RYAN	20-027-68-3250	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR	DIL 1:2
23880	JOHNSON, DAVID L	20-232-31-6597	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23880	JOHNSON, DAVID L	20-232-31-6597	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR	
23881	LABONTE, KEVIN P	20-003-64-2509	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23881	LABONTE, KEVIN P	20-003-64-2509	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR	NEG. CONT
23882	ZIMMERLEE, MICHAEL K	20-465-45-8835	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23882	ZIMMERLEE, MICHAEL K	20-465-45-8835	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR	
23883	FERGUSON, MARCUS W	20-220-84-2859	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23883	FERGUSON, MARCUS W	20-220-84-2859	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR	
23884	ROWAN, THOMAS	20-301-68-8561	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23884	ROWAN, THOMAS	20-301-68-8561	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23885	JOHNSON, CRAIG T	20-449-91-1471	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23886	STONER, JOHN P	20-335-68-3772	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23886	STONER, JOHN P	20-335-68-3772	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR	
23887	ERICKSON, PATRICK G	20-553-95-8555	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23887	ERICKSON, PATRICK G	20-553-95-8555	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR	
23888	SMITHERS, STEVE	-403-08-2991	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23888	SMITHERS, STEVE	-403-08-2991	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR	
23889	CROSBY, PAUL N	20-082-58-3233	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23889	CROSBY, PAUL N	20-082-58-3233	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR	
23890	WILT, JIM	20-265-55-8545	BL 21-JUN-93	LM	90009	24-JUN-93	LEISHMANIA	JW 11/12	-	-	NR	
23890	WILT, JIM	20-265-55-8545	BL 21-JUN-93	LM	90009	02-JUL-93	LEISHMANIA	JW 11/12	-	-	NR	

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments
24068	WILLIAMS, MICHAEL	20-412-37-5674	BL 25-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24069	BEST, JAMIE	20-237-23-1335	BL 25-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24070	HAMILTON, WAYNE	20-101-72-4824	BL 25-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24071	ORTIZ, JOSE V	-583-70-9171	BL 25-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24072	WALY, GLEN	-020-64-1508	BL 25-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24073	ANDERSON, JEFFREY J	-561-67-7471	BL 25-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24074	MORGAN, MARK J	-419-19-7233	BL 25-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24075	FERNANDEZ, EDWARD W	-141-70-1400	BL 25-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24102	TONEY, ANGELA	20-231-88-9557	BL 28-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24125	NICELY, SCOTT	-595-01-8826	BM 29-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24126	NICELY, SCOTT	-595-01-8826	BL 29-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24127	TONEY, ANGELA	20-231-88-9557	BM 29-JUN-93	LM	90009	07-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24175	STEWART, KRYSTAL	20-456-29-6993	BL 02-JUL-93	LM	90009	09-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24176	ABLE, MARSHALL	20-215-11-2232	BL 02-JUL-93	LM	90009	09-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24177	KAYS, WILLIAM	20-050-58-3509	BL 02-JUL-93	LM	90009	09-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24178	JENNESS, BRENT	20-350-58-6774	BL 02-JUL-93	LM	90009	09-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24223	RUSH, JAMES	20-256-21-0213	BL 06-JUL-93	LM	90009	09-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24224	RUSH, JAMES	20-256-21-0213	BM 06-JUL-93	LM	90009	09-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24454	PATIENT 14-JUL-93, L	-	BL 14-JUL-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
24454	PATIENT 14-JUL-93, L	-	BL 14-JUL-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	-	-	NR
Z000101	2A125-A,	-	BL 09-DEC-92	LM	90009	16-DEC-93	LEISHMANIA	JW 11/12	+	+	RE
Z000101	2A125-A,	-	BL 09-DEC-92	LM	90009	10-DEC-92	LEISHMANIA	JW 11/12	+	+	RE
Z000102	2A125-B,	-	BL 09-DEC-92	LM	90009	16-DEC-93	LEISHMANIA	JW 11/12	-	-	NR

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Spec ID Patient Name	PPC + SSN	Spec Received Type Date	Study	Panel Assay Date Virus	Primer	Tube # 1	Tube # 2	Int	Comments
Z000102 2A125-B,	-	BL 09-DEC-92 LM	LM	90009 10-DEC-92 LEISHMANIA	JW 11/12	-	-	NR	
Z000103 2A125-C,	-	BL 09-DEC-92 LM	LM	90009 16-DEC-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000103 2A125-C,	-	BL 09-DEC-92 LM	LM	90009 10-DEC-92 LEISHMANIA	JW 11/12	-	-	NR	
Z000104 2A125-D,	-	BL 09-DEC-92 LM	LM	90009 16-DEC-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000104 2A125-D,	-	BL 09-DEC-92 LM	LM	90009 10-DEC-92 LEISHMANIA	JW 11/12	+	+	RE	
Z000105 2A125-E,	-	BL 09-DEC-92 LM	LM	90009 16-DEC-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000105 2A125-E,	-	BL 09-DEC-92 LM	LM	90009 10-DEC-92 LEISHMANIA	JW 11/12	+	+	RE	
Z000106 2A125-F,	-	BL 09-DEC-92 LM	LM	90009 16-DEC-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000106 2A125-F,	-	BL 09-DEC-92 LM	LM	90009 10-DEC-92 LEISHMANIA	JW 11/12	+	+	RE	
Z000107 2A125-1,	-	BL 09-DEC-92 LM	LM	90009 16-DEC-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000107 2A125-1,	-	BL 09-DEC-92 LM	LM	90009 10-DEC-92 LEISHMANIA	JW 11/12	+	+	RE	
Z000108 2A125-2,	-	BL 09-DEC-92 LM	LM	90009 16-DEC-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000108 2A125-2,	-	BL 09-DEC-92 LM	LM	90009 10-DEC-92 LEISHMANIA	JW 11/12	-	-	NR	
Z000109 2A125-3,	-	BL 09-DEC-92 LM	LM	90009 16-DEC-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000109 2A125-3,	-	BL 09-DEC-92 LM	LM	90009 10-DEC-92 LEISHMANIA	JW 11/12	-	-	NR	
Z000110 2A125-4,	-	BL 09-DEC-92 LM	LM	90009 16-DEC-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000110 2A125-4,	-	BL 09-DEC-92 LM	LM	90009 10-DEC-92 LEISHMANIA	JW 11/12	+	+	RE	
Z000111 2A125-5,	-	BL 09-DEC-92 LM	LM	90009 16-DEC-93 LEISHMANIA	JW 11/12	-	+	IND	
Z000111 2A125-5,	-	BL 09-DEC-92 LM	LM	90009 10-DEC-92 LEISHMANIA	JW 11/12	+	+	RE	
Z000112 2A125-6,	-	BL 09-DEC-92 LM	LM	90009 16-DEC-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000112 2A125-6,	-	BL 09-DEC-92 LM	LM	90009 10-DEC-92 LEISHMANIA	JW 11/12	+	+	RE	
Z000117 2A125-A,	-	BL 16-DEC-92 LM	LM	90009 21-DEC-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000118 2A125-B,	-	BL 16-DEC-92 LM	LM	90009 21-DEC-93 LEISHMANIA	JW 11/12	+	+	RE	

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Spec ID Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date Virus	Primer	Tube # 1 # 2	Int	Comments
Z000119 2A125-C,	-	BL 16-DEC-92 LM	IM	90009 21-DEC-93 LEISHMANIA	JW 11/12	-	-	NR
Z000120 2A125-D,	-	BL 16-DEC-92 IM	IM	90009 21-DEC-93 LEISHMANIA	JW 11/12	+	+	RE
Z000121 ANTI GP160/2,	-	CE 09-DEC-92 FLOW	FLOW	90009 21-DEC-93 LEISHMANIA	JW 11/12	+	+	RE
Z000122 ANTI GP160/2,	-	CE 09-DEC-92 FLOW	FLOW	90009 21-DEC-93 LEISHMANIA	JW 11/12	-	-	NR
Z000161 A,	-	BL 30-DEC-92 IM	IM	90009 06-JAN-93 LEISHMANIA	JW 11/12	-	-	NR
Z000162 C,	-	BL 30-DEC-92 LM	LM	90009 06-JAN-93 LEISHMANIA	JW 11/12	+	+	RE
Z000162 C,	-	BL 30-DEC-92 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	+	RE +REP
Z000163 E,	-	BL 30-DEC-92 LM	LM	90009 06-JAN-93 LEISHMANIA	JW 11/12	+	+	RE
Z000163 E,	-	BL 30-DEC-92 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	+	RE +REP
Z000164 F,	-	BL 30-DEC-92 LM	LM	90009 06-JAN-93 LEISHMANIA	JW 11/12	-	-	NR
Z000164 F,	-	BL 30-DEC-92 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	+	RE +REP
Z000165 H,	-	BL 30-DEC-92 LM	LM	90009 06-JAN-93 LEISHMANIA	JW 11/12	+	+	RE
Z000165 H,	-	BL 30-DEC-92 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	+	RE +REP
Z000166 J,	-	BL 30-DEC-92 LM	LM	90009 06-JAN-93 LEISHMANIA	JW 11/12	+	+	RE
Z000166 J,	-	BL 30-DEC-92 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	+	RE +REP
Z000167 MARY,	-	BL 11-JAN-93 LM	LM	90009 11-JAN-93 LEISHMANIA	JW 11/12	+	+	RE
Z000167 MARY,	-	BL 11-JAN-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	+	RE +REP
Z000168 BABLU HEUL,	-	BL 11-JAN-93 LM	LM	90009 11-JAN-93 LEISHMANIA	JW 11/12	+	+	RE
Z000168 BABLU HEUL,	-	BL 11-JAN-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	+	RE +REP
Z000169 LAUZSHMI,	-	BL 11-JAN-93 LM	LM	90009 11-JAN-93 LEISHMANIA	JW 11/12	+	+	RE
Z000169 LAUZSHMI,	-	BL 11-JAN-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	+	RE +REP
Z000170 KOMESHCOAR,	-	BL 11-JAN-93 LM	LM	90009 11-JAN-93 LEISHMANIA	JW 11/12	+	+	RE
Z000170 KOMESHCOAR,	-	BL 11-JAN-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	-	IND +REP



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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube #	Tube	Int	Comments
								1	2		
Z000171	BIMALDEY,	-	BL 11-JAN-93	LM	90009	11-JAN-93	LEISHMANIA	JW 11/12	+	+	RE
Z000171	BIMALDEY,	-	BL 11-JAN-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000172	JAINAI,	-	BL 11-JAN-93	LM	90009	11-JAN-93	LEISHMANIA	JW 11/12	+	+	RE
Z000172	JAINAI,	-	BL 11-JAN-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	-	IND +REP
Z000173	ALOR-RAYAR,	-	BL 11-JAN-93	LM	90009	11-JAN-93	LEISHMANIA	JW 11/12	+/-	+/-	IND
Z000173	ALOR-RAYAR,	-	BL 11-JAN-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	-	-	NR +REP
Z000174	ARMIN-KUMARINE,	-	BL 11-JAN-93	LM	90009	11-JAN-93	LEISHMANIA	JW 11/12	+	+	RE
Z000174	ARMIN-KUMARINE,	-	BL 11-JAN-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000175	AMIL KUMAR,	-	BL 11-JAN-93	LM	90009	11-JAN-93	LEISHMANIA	JW 11/12	-	-	NR
Z000176	HASINER-KHAFIN,	-	BL 11-JAN-93	LM	90009	11-JAN-93	LEISHMANIA	JW 11/12	+	+	RE
Z000176	HASINER-KHAFIN,	-	BL 11-JAN-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	-	IND +REP
Z000177	SUMAY KUMAR,	-	BL 11-JAN-93	LM	90009	11-JAN-93	LEISHMANIA	JW 11/12	-	-	NR
Z000178	RULI-KUMAR,	-	BL 11-JAN-93	LM	90009	11-JAN-93	LEISHMANIA	JW 11/12	+	+	RE
Z000178	RULI-KUMAR,	-	BL 11-JAN-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000257	30491,	-	BL 18-FEB-93	LM	90009	19-FEB-93	LEISHMANIA	JW 11/12	+	+	RE
Z000257	30491,	-	BL 18-FEB-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000258	30492,	-	BL 18-FEB-93	LM	90009	19-FEB-93	LEISHMANIA	JW 11/12	+	+	RE
Z000258	30492,	-	BL 18-FEB-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE
Z000259	30493,	-	BL 19-FEB-93	LM	90009	19-FEB-93	LEISHMANIA	JW 11/12	+	+	RE
Z000259	30493,	-	BL 19-FEB-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000260	30494,	-	BL 18-FEB-93	LM	90009	19-FEB-93	LEISHMANIA	JW 11/12	+	+	RE
Z000260	30494,	-	BL 18-FEB-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000261	30495,	-	BL 18-FEB-93	LM	90009	19-FEB-93	LEISHMANIA	JW 11/12	-	-	NR

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments
Z000262	30496,	-	BL 18-FEB-93	LM	90009	19-FEB-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000263	30497,	-	BL 18-FEB-93	LM	90009	19-FEB-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000264	30481,	-	BL 18-FEB-93	LM	90009	19-FEB-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000308	30691A,	-	BL 11-MAR-93	LM	90009	15-MAR-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000308	30691A,	-	BL 11-MAR-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000309	30692A,	-	BL 11-MAR-93	LM	90009	15-MAR-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000309	30692A,	-	BL 11-MAR-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000310	30693A,	-	BL 11-MAR-93	LM	90009	15-MAR-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000310	30693A,	-	BL 11-MAR-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	-	IND	+REP
Z000311	30694A,	-	BL 11-MAR-93	LM	90009	15-MAR-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000312	30695A,	-	BL 11-MAR-93	LM	90009	15-MAR-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000312	30695A,	-	BL 11-MAR-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000313	WILT, TIMOTHY L	03-205-21-9045	BL 12-MAR-93	LM	90009	15-MAR-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000320	PT. PLC,	-	BL 23-MAR-93	LM	90009	25-MAR-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000320	PT. PLC,	-	BL 23-MAR-93	LM	90009	05-APR-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000320	PT. PLC,	-	BL 23-MAR-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	-	+/-	IND	+REP
Z000321	PT. C.A.N.,	-	BL 23-MAR-93	LM	90009	05-APR-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000321	PT. C.A.N.,	-	BL 23-MAR-93	LM	90009	25-MAR-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000336	1,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000339	4,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000340	5,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	-	-	NR	+REP
Z000342	7,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000343	8,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA	JW 11/12	+	+	RE	+REP

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Spec ID Patient Name	PFC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments
Z000344 9,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	+	+	RE	+REP
Z000345 10,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	+	+	RE	+REP, -CON
Z000346 11,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	+	+	RE	+REP
Z000347 12,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	+	+	RE	+REP
Z000349 14,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	+	+	RE	+REP
Z000351 16,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	+	+	RE	+REP
Z000352 17,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	+	+	RE	+REP
Z000353 20,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	+	+	RE	+REP
Z000354 21,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	+	+	RE	+REP
Z000355 22,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	+	+	RE	+REP
Z000356 23,	-	BL 26-MAR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	+	+	RE	+REP
Z000367 30911,	-	BL 01-APR-93	LM	90009	05-APR-93	LEISHMANIA JW 11/12	-	-	NR	
Z000368 30912,	-	BL 01-APR-93	LM	90009	05-APR-93	LEISHMANIA JW 11/12	-	-	NR	
Z000369 30913,	-	BL 01-APR-93	LM	90009	05-APR-93	LEISHMANIA JW 11/12	-	-	NR	
Z000370 30914,	-	BL 01-APR-93	LM	90009	05-APR-93	LEISHMANIA JW 11/12	-	-	NR	
Z000379 31022,	-	BL 12-APR-93	LM	90009	29-JUL-93	LEISHMANIA JW 11/12	-	-	NR	+REP
Z000413 GABORONE, JB	-	BL 23-APR-93	LM	90009	27-APR-93	LEISHMANIA JW 11/12	-	-	IND	
Z000414 JASON, DAVID	-	BL 23-APR-93	LM	90009	27-APR-93	LEISHMANIA JW 11/12	-	-	IND	
Z000460 RUBENSTEIN, CRAIG	-	BM 21-MAY-93	LM	90009	01-JUL-93	LEISHMANIA JW 11/12	-	-	NR	
Z000460 RUBENSTEIN, CRAIG	-	BM 21-MAY-93	LM	90009	25-MAY-93	LEISHMANIA JW 11/12	-	-	NR	
Z000461 RUBENSTEIN, CRAIG	-	BL 21-MAY-93	LM	90009	01-JUL-93	LEISHMANIA JW 11/12	-	-	NR	
Z000461 RUBENSTEIN, CRAIG	-	BL 21-MAY-93	LM	90009	25-MAY-93	LEISHMANIA JW 11/12	-	-	NR	
Z000473 J40,	-	BL 26-MAY-93	LM	90009	27-MAY-93	LEISHMANIA JW 11/12	+	+	RE	

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Spec ID Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date Virus	Primer	Tube Tube # 1 # 2 Int	Comments
Z000473 J40,	-	BL 26-MAY-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	- - NR	+REP
Z000474 PBS AIL,	-	BL 26-MAY-93 LM	LM	90009 27-MAY-93 LEISHMANIA	JW 11/12	+ + RE	
Z000474 PBS AIL,	-	BL 26-MAY-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	- - NR	+REP
Z000475 J45,	-	BL 26-MAY-93 LM	LM	90009 27-MAY-93 LEISHMANIA	JW 11/12	+ + RE	
Z000475 J45,	-	BL 26-MAY-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	- - NR	+REP
Z000476 J4N,	-	BL 26-MAY-93 LM	LM	90009 27-MAY-93 LEISHMANIA	JW 11/12	+ + RE	
Z000476 J4N,	-	BL 26-MAY-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	- - NR	+REP
Z000501 31601,	-	BL 09-JUN-93 LM	LM	90009 15-JUN-93 LEISHMANIA	JW 11/12	- - NR	
Z000502 31601,	-	BM 09-JUN-93 LM	LM	90009 15-JUN-93 LEISHMANIA	JW 11/12	- - NR	
Z000503 31621,	-	BL 11-JUN-93 LM	LM	90009 15-JUN-93 LEISHMANIA	JW 11/12	+ + RE	
Z000503 31621,	-	BL 11-JUN-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	- +/- IND	+REP
Z000504 31622,	-	BL 14-JUN-93 LM	LM	90009 15-JUN-93 LEISHMANIA	JW 11/12	+ + RE	
Z000504 31622,	-	BL 14-JUN-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	- - NR	+REP
Z000505 31623,	-	BL 11-JUN-93 LM	LM	90009 15-JUN-93 LEISHMANIA	JW 11/12	+ + RE	
Z000505 31623,	-	BL 11-JUN-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	- - NR	+REP
Z000506 31624,	-	BL 11-JUN-93 LM	LM	90009 15-JUN-93 LEISHMANIA	JW 11/12	+ + RE	
Z000506 31624,	-	BL 11-JUN-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	- - NR	+REP
Z000507 CHIPLEY, JOSHUA W	20-564-33-6887	TE 11-JUN-93 LM	LM	90009 15-JUN-93 LEISHMANIA	JW 11/12	- - NR	
Z000508 CHIPLEY, JOSHUA W	20-564-33-6887	TE 11-JUN-93 LM	LM	90009 15-JUN-93 LEISHMANIA	JW 11/12	- - NR	
Z000511 WILLIAMS, MARQUET	-	PL 24-JUN-93 LM	LM	90009 07-JUL-93 LEISHMANIA	JW 11/12	- - NR	
Z000517 31881,	-	BL 07-JUL-93 LM	LM	90009 09-JUL-93 LEISHMANIA	JW 11/12	- - NR	
Z000518 31882,	-	BL 07-JUL-93 LM	LM	90009 09-JUL-93 LEISHMANIA	JW 11/12	- - NR	
Z000519 31883,	-	BL 07-JUL-93 LM	LM	90009 09-JUL-93 LEISHMANIA	JW 11/12	+ + RE	

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Z000520 31884,	-	BL 07-JUL-93 LM	LM	90009 09-JUL-93 LEISHMANIA	JW 11/12	+	RE
Z000541 31931,	-	BL 12-JUL-93 LM	LM	90009 16-JUL-93 LEISHMANIA	JW 11/12	+	RE
Z000541 31931,	-	BL 12-JUL-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	RE
Z000542 31932,	-	BL 12-JUL-93 LM	LM	90009 16-JUL-93 LEISHMANIA	JW 11/12	+	RE
Z000542 31932,	-	BL 12-JUL-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	RE
Z000543 31933,	-	BL 12-JUL-93 LM	LM	90009 16-JUL-93 LEISHMANIA	JW 11/12	+	RE
Z000543 31933,	-	BL 12-JUL-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	+	RE
Z000550 31971,	-	BL 16-JUL-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	-	+/- IND
Z000551 31972,	-	BL 16-JUL-93 LM	LM	90009 29-JUL-93 LEISHMANIA	JW 11/12	-	NR
20345 HAMWACK, WENDELL	20-427-49-8157	BM 27-JAN-93	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	+	IND +REP
20344 HAMWACK, WENDELL	20-427-49-8157	BL 27-JAN-93	LM	90009 03-AUG-93 LEISHMANIA	JW 11/12	-	NR +REP
23345 GHEBREMESCHEL, TADDE	20-049-34-1541	BM 27-MAY-93	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	+	IND +REP
Z000101 2A125-A,	-	BL 09-DEC-92 LM	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	+	RE +REP
Z000104 2A125-D,	-	BL 09-DEC-92 LM	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	+	RE +REP
Z000105 2A125-E,	-	BL 09-DEC-92 LM	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	+	RE +REP
Z000112 2A125-6,	-	BL 09-DEC-92 LM	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	+	RE +REP
Z000117 2A125-A,	-	BL 16-DEC-92 LM	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	+	RE +REP
Z000145 2A125-5,	-	BL 16-DEC-92 LM	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	-	NR +REP
Z000310 30693A,	-	BL 11-MAR-93 LM	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	+	RE +REP
Z000340 5,	-	BL 26-MAR-93 LM	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	-	NR +REP
Z000379 31022,	-	BL 12-APR-93 LM	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	+	RE +REP
Z000439 1,	-	BL 30-APR-93 LM	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	-	NR +REP
Z000440 2,	-	BL 30-APR-93 LM	LM	90009 04-AUG-93 LEISHMANIA	JW 11/12	-	IND +REP

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments
Z000466	GRAVES, ERIC	20-003-60-3564	LI 25-MAY-93	LM	90009	04-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000473	J40,	-	BL 26-MAY-93	LM	90009	04-AUG-93	LEISHMANIA	JW 11/12	-	+	IND	+REP
Z000474	FBS AIL,	-	BL 26-MAY-93	LM	90009	04-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000475	J45,	-	BL 26-MAY-93	LM	90009	04-AUG-93	LEISHMANIA	JW 11/12	+	-	IND	+REP
Z000476	J4N,	-	BL 26-MAY-93	LM	90009	04-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000503	31621,	-	BL 11-JUN-93	LM	90009	04-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
20345	HAMWACK, WENDELL	20-427-49-8157	BM 27-JAN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	+REP, NEG. CONT
21552	SCHONEBOOM, BRAD L	20-367-76-1421	BM 15-MAR-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	+REP
22745	WADDELL, DIRK	20-343-56-3223	BL 04-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	+REP
23046	WADDELL, DIRK	20-343-56-3223	BL 17-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	+REP
23250	CHIPLEY, JOSHUA W	20-564-33-6887	BL 21-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	+	IND	+REP
23345	GHEBREMESCHEL, TADDE	20-049-34-1541	BM 27-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	+REP
Z000101	2A125-A,	-	BL 09-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	+REP
Z000104	2A125-D,	-	BL 09-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	+REP
Z000105	2A125-E,	-	BL 09-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	+	IND	+REP
Z000106	2A125-F,	-	BL 09-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000107	2A125-1,	-	BL 09-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000110	2A125-4,	-	BL 09-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000111	2A125-5,	-	BL 09-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000112	2A125-6,	-	BL 09-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000117	2A125-A,	-	BL 16-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	+REP
Z000118	2A125-B,	-	BL 16-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	+REP
Z000120	2A125-D,	-	BL 16-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	+REP

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Z000144 2A125-4,	-	BL 16-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000145 2A125-5,	-	BL 16-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR +REP
Z000146 2A125-6,	-	BL 16-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR +REO
Z000440 2,	-	BL 30-APR-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR +REP
Z000350 15,	-	BL 26-MAR-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000439 1,	-	BL 30-APR-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR +REP
Z000466 GRAVES, ERIC	20-003-60-3564	LI 25-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR +REP
22955 DAREY, GREGORY S	20-505-06-2923	BL 12-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE +REP
23328 J4,	-	BL 26-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE +REP
23328 J4,	-	BL 26-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000170 KOMESHCOAR,	-	BL 11-JAN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE +REP, CONT
Z000172 JAINAI,	-	BL 11-JAN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000173 ALOR-RAVAR,	-	BL 11-JAN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR +REP
Z000176 HASINER-KHAPIN,	-	BL 11-JAN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000310 30693A,	-	BL 11-MAR-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE +REP, CONT
Z000320 PT. PLC,	-	BL 23-MAR-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE +REP
Z000379 31022,	-	BL 12-APR-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR +REP
Z000473 J40,	-	BL 26-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR +REP
Z000474 PBS AIL,	-	BL 26-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	+	IND +REP, CONT
Z000475 J45,	-	BL 26-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	-	IND +REP
Z000476 J4N,	-	BL 26-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	-	IND +REP
Z000503 31621,	-	BL 11-JUN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	+	IND +REP
Z000504 31622,	-	BL 14-JUN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE +REP

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Z000505 31623,	-	BL 11-JUN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	+REP
Z000170 KOMESHCOAR,	-	BL 11-JAN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	-	IND	REP.PL.
Z000170 KOMESHCOAR,	-	BL 11-JAN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	-	IND	REP.PL.
Z000310 30693A,	-	BL 11-MAR-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	-	IND	REP.PL.
Z000310 30693A,	-	BL 11-MAR-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	REP.PL
Z000503 31621,	-	BL 11-JUN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	REP.PL.
Z000504 31622,	-	BL 14-JUN-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	+	-	IND	REP.PL.
23250 CHIPLEY, JOSHUA W	20-564-33-6887	BL 21-MAY-93	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	REP.PL.,DIL
Z000105 2A125-E,	-	BL 09-DEC-92	LM	90009	03-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	REP.PL
24930 32211,	-	BL 09-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
24931 32212,	-	BL 09-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
24932 32213,	-	BL 09-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000550 31971,	-	BL 16-JUL-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000591 LEH1663,	-	BL 05-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000592 LEH1664,	-	BL 05-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000593 LEH1665,	-	BL 05-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000594 LEH1666,	-	BL 05-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000595 LEH1667,	-	BL 05-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000596 LEH1668,	-	BL 05-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000597 BLUSAU-MIZBSA, SHASH	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000598 BLUSAU-MIZBSA, SHASH	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000599 CPT-2,	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000600 KERRY, SUDHRI	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	



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Z000601	RAJUARA, SUTHER-KWAR	-	BL 10-AUG-93	LM	90009	15-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000602	DEIS, GEETA	-	BL 10-AUG-93	LM	90009	15-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000603	DEIS, GEETA	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000604	THAFCEP, SURON	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000605	SHUYARRU, KERROZ	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000606	REEJU, DAS	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000607	SHAUMARTI, CHEWHY	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000608	RAKESH, KUMAR	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000609	MIRTHELESWAR, PRASAD	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000610	NARESH, PASWAN	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000611	RAJESWAR, PD	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000612	RUBY, KUMARI	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000613	RAM, JINISH	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000614	MANOJ, RAM	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000615	RUBI, KUMARIS	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000616	RAITHA, MAHAU	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000617	GANESH, MAIRBO	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000618	SUNIL, KUMAR	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000619	UMESH, SAH	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000620	SARISI,	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000625	RHARAUBIR,	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000626	MANAJ, RAUU	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000627	RAMJINEESH, PANDIT	-	BL 10-AUG-93	LM	90009	16-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	

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Spec ID Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date Virus	Primer	Tube Tube # 1 # 2	Int Comments
Z000628 ANUJ, RANJAN	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	NR
Z000629 MITHILESHWAR, PD SIR	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
Z000630 RAKESH, KUMAR	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
Z000631 NARESH, PASWAN	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
Z000632 GHAMANDI, CHAUDHARY	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
Z000633 RAJU, DAS	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
Z000634 SHYAM, SAH K	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
Z000635 RAMAKANKA, RAI	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
Z000636 SITAWAR, DEVI	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	NR
Z000637 SAMOD, KUMAR	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	NR
Z000638 RAJESH, KUMAR	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	NR
Z000639 CHAUDSA, CHEVZ	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
Z000640 RAVETH, LAMB	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	NR
Z000641 SUJAFEI, LAMB	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
Z000642 SAMUR, KUNG	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	NR
Z000643 AREY, RAYAN	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	NR
Z000644 DHARAURIY,	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
Z000645 VMESH, SCH	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
Z000646 SARITA, KUMARI	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	RE
23084 VEGA, EDUARDO A	20-584-54-8581	BL 18-MAY-93	RV2	90009 20-MAY-93 LEISHMANIA	JW 11/12	-	NR
23085 GRAVES, ERIC	20-003-60-3564	BM 18-MAY-93	LM	90009 20-MAY-93 LEISHMANIA	JW 11/12	-	NR
22977 274D,	-	BL 12-MAY-93	LM	90009 20-MAY-93 LEISHMANIA	JW 11/12	-	NR
23012 WADDELL, DIRK	20-343-56-3223	BL 14-MAY-93	LM	90009 20-MAY-93 LEISHMANIA	JW 11/12	-	+/- IND

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube Tube		Int	Comments
									# 1	# 2		
23046	WADDELL, DIRK	20-343-56-3223	BL 17-MAY-93	LM	90009	20-MAY-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000647	RUSHA, MOHAN SINGH	-	BL 10-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
22970	A346,	-	BL 12-MAY-93	LM	90009	20-MAY-93	LEISHMANIA	JW 11/12	+	-	IND	
Z000650	RAMESH, KW	-	BL 10-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	+	-	IND	-REP
Z000651	RAWAKAWT, RAI	-	BL 10-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
Z000652	BUDHAN, MAHTO	-	BL 10-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	-REP
Z000653	SILAWAR, DEVI	-	BL 10-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
Z000654	SUDHIR, KUMAR	-	BL 10-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	-REP
Z000655	SARRAULLAH,	-	BL 10-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
Z000657	MO, SONAWAE	-	BL 10-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
Z000658	SWUGH, THAKUR	-	BL 10-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	-REP
Z000659	32251,	-	BL 13-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
Z000660	32252,	-	BM 13-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
Z000668	32253,	-	BL 13-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
Z000669	32254,	-	BL 13-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	+	IND	-REP
24930	32211,	-	BL 09-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	+/	-	IND	-REP
24931	32212,	-	BL 09-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
24932	32213,	-	BL 09-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
Z000591	LEH1663,	-	BL 05-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	+	-	IND	-REP
Z000592	LEH1664,	-	BL 05-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
Z000593	LEH1665,	-	BL 05-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
Z000594	LEH1666,	-	BL 05-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
Z000607	SHAUMARTI, CHEWHY	-	BL 10-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	-REP

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Z000608 RAKESH, KUMAR	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	+ + RE	-REP
Z000609 MIRTHELESWAR, PRASAD	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	+ + RE	-REP
Z000610 NARESH, PASWAN	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	+ + RE	-REP
Z000611 RAJESWAR, PD	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000612 RUBY, KUMARI	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000613 RAM, JINISH	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000614 MANOJ, RAM	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000615 RUBI, KUMARIS	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000616 RAITHA, MAHAU	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000626 MANAJ, RAU	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000627 RAMJINEESH, PANDIT	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000638 RAJESH, KUMAR	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000640 RAYETH, LAMB	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000642 SAMUR, KUNG	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000643 AREY, RAYAN	-	BL 10-AUG-93	LM	90009 24-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
24930 32211,	-	BL 09-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
24931 32212,	-	BL 09-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
24932 32213,	-	BL 09-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000550 31971,	-	BL 16-JUL-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000591 LEH1663,	-	BL 05-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000592 LEH1664,	-	BL 05-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000593 LEH1665,	-	BL 05-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP
Z000594 LEH1666,	-	BL 05-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	- - NR	-REP

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Spec ID Patient Name	PFC + SSN	Spec Received Type Date	Study	Panel Assay Date Virus	Primer	Tube # 1	Tube # 2	Int	Comments
Z000595 LEH1667,	-	BL 05-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000596 LEH1668,	-	BL 05-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000597 BLUSAU-MIZBSA, SHASH	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000598 BLUSAU-MIZBSA, SHASH	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000600 KERRY, SUDHRI	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000601 RAJUARA, SUTHER-KWAR	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000602 DEIS, GEETA	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000603 DEIS, GEETA	-	BL 10-AUG-93	LM	90009 15-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000604 THAFER, SURON	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000605 SHUYARRU, KERROZ	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000606 REEJU, DAS	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000607 SHAUMARTI, CHEWHY	-	BL 10-AUG-93	LM	90009 15-AUG-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000608 RAKESH, KUMAR	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000609 MIRTHELESWAR, PRASAD	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000610 NARESH, PASWAN	-	BL 10-AUG-93	LM	90009 15-AUG-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000611 RAJESWAR, PD	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000612 RUBY, KUMARI	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000613 RAM, JINISH	-	BL 10-AUG-93	LM	90009 16-AUG-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000614 MANOJ, RAM	-	BL 10-AUG-93	LM	90009 15-AUG-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000647 RUSHA, MOHAN SINGH	-	BL 10-AUG-93	LM	90009 23-AUG-93 LEISHMANIA	JW 11/12	-	-	NR	
Z000648 SUNIL, KUMAR	-	BL 10-AUG-93	LM	90009 23-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000649 AMRENDON, KUMA	-	BL 10-AUG-93	LM	90009 23-AUG-93 LEISHMANIA	JW 11/12	+	+	RE	
Z000650 RAMESH, KW	-	BL 10-AUG-93	LM	90009 23-AUG-93 LEISHMANIA	JW 11/12	+	-	IND	

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments
Z000651	RAMAKAWT, RAI	-	BL 10-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000652	BUDHAN, MAHTO	-	BL 10-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000653	SILAWAR, DEVI	-	BL 10-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000654	SUDHIR, KUMAR	-	BL 10-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000655	SARRAULLAH,	-	BL 10-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000656	YANESH, MAHITA	-	BL 10-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000657	MO, SONAWAE	-	BL 10-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000658	SWUGH, THAKUR	-	BL 10-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	+	IND	
Z000659	32251,	-	BL 13-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000660	32252,	-	BM 13-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	+	-	IND	
Z000668	32253,	-	BL 13-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000669	32254,	-	BL 13-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000673	WADDELL, DIRK	20-343-56-3223	BL 17-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000674	WADDELL, DIRK	20-343-56-3223	BM 17-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000675	WADDELL, DIRK	20-343-56-3223	LI 18-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
25229	LEISHMANIA, 19-AUG-9	-	BL 19-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
25230	LEISHMANIA, 19-AUG-9	-	BL 19-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
25231	LEISHMANIA, 19-AUG-9	-	BL 19-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
25232	LEISHMANIA, 19-AUG-9	-	BL 19-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
25233	LEISHMANIA, 19-AUG-9	-	BL 19-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
25234	LEISHMANIA, 19-AUG-9	-	BL 19-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
25235	LEISHMANIA, 19-AUG-9	-	BL 19-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	
25236	LEISHMANIA, 19-AUG-9	-	BL 19-AUG-93	LM	90009	23-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	

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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube #	Tube #	Int	Comments
2000643	AREY, RAYAN	-	BL 10-AUG-93	LM	90009	24-AUG-93	LEISHMANIA	JW 11/12	-	-	NR	-REP
25286	WADDELL, DIRK	20-343-56-3223	BL 24-AUG-93	LM	90009	01-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	SPLEEN ASP.
25391	LYON, JOAN	-234-88-3551	BL 30-AUG-93	LM	90009	08-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25474	LAKNER, GEORGE	-156-59-8935	BL 03-SEP-93	LM	90009	08-SEP-93	LEISHMANIA	JW 11/12	-	+	IND	IND
25475	LAKNER, GEORGE	-156-59-8935	BM 03-SEP-93	LM	90009	08-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25609	53F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25610	54F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	+	IND	
25611	65F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	+	+	RE	NEG. CONT.
25612	67F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25613	70F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25614	71F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25615	72F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25616	73/74F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25617	77F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25618	78F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25619	80F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25620	81F,	-	BL 08-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25646	MYKUT, STEVEN	-	BL 09-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25647	MYKUT, STEVEN	-	BM 09-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25474	LAKNER, GEORGE	-156-59-8935	BL 03-SEP-93	LM	90009	14-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25931	MALLOY, VICTOR	20-308-60-0996	BL 23-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25932	MALLOY, VICTOR	20-308-60-0996	OT 23-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000703	MALLOY, VICTOR	20-308-60-0996	OT 23-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE

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PCR Assay Results: LM  
Probe JW 14

Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments
25976	53,	-	BL 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25977	54,	-	BM 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25978	65,	-	BM 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25979	67,	-	BL 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25980	70,	-	BL 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25981	71,	-	BM 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25982	72,	-	BM 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25983	73/74,	-	BL 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25984	77,	-	BM 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25985	78,	-	BL 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25986	80,	-	BL 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25987	81,	-	BL 27-SEP-93	LM	90009	05-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
25931	MALLOY, VICTOR	20-308-60-0996	BL 23-SEP-93	LM	90009	30-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25932	MALLOY, VICTOR	20-308-60-0996	OT 23-SEP-93	LM	90009	30-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
2000703	MALLOY, VICTOR	20-308-60-0996	OT 23-SEP-93	LM	90009	30-SEP-93	LEISHMANIA	JW 11/12	+	-	IND	
25976	53,	-	BL 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA	JW 11/12	-	+	IND	
25977	54,	-	BM 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25978	65,	-	BM 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25979	67,	-	BL 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25980	70,	-	BL 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25981	71,	-	BM 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA	JW 11/12	-	+	IND	
25982	72,	-	BM 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	
25983	73/74,	-	BL 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA	JW 11/12	-	-	NR	



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PCR Assay Results: IM  
Probe JW 14

Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments
25984	77,	-	BM 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA JW 11/12	-	+	IND	
25985	78,	-	BL 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA JW 11/12	-	-	NR	
25986	80,	-	BL 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA JW 11/12	-	+	IND	
25987	81,	-	BL 27-SEP-93	LM	90009	30-SEP-93	LEISHMANIA JW 11/12	-	-	NR	
25474	LAKNER, GEORGE	-156-59-8935	BL 03-SEP-93	LM	90009	30-SEP-93	LEISHMANIA JW 11/12	-	-	NR	
25610	54F,	-	BL 08-SEP-93	LM	90009	30-SEP-93	LEISHMANIA JW 11/12	-	-	NR	
25611	65F,	-	BL 08-SEP-93	LM	90009	30-SEP-93	LEISHMANIA JW 11/12	+	+	RE	
Z000720	32731,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000721	32732,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000722	32733,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000723	32734,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000724	32735,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000725	32736,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000726	32737,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000727	32738,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000728	32739,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000729	327310,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000730	327311,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000731	327312,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000732	327313,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000733	327314,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000734	327315,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000735	327316,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE

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PCR Assay Results: LM  
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Spec ID Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments
Z000736 327317,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000737 327318,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000738 327319,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000739 327320,	-	BL 30-SEP-93	LM	90009	14-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000720 32731,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	+	-	IND	
Z000721 32732,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000722 32733,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000723 32734,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000724 32735,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000725 32736,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000726 32737,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000727 32738,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000728 32739,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000729 327310,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000730 327311,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000731 327312,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000732 327313,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000733 327314,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000734 327315,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000735 327316,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000736 327317,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000737 327318,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000738 327319,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	

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PCR Assay Results: LM  
Probe JW 14

Spec ID Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments
Z000739 327320,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000740 327321,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000741 327322,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000742 327323,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000743 327324,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000744 327325,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000745 327326,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000746 327327,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000747 327328,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000748 327329,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000749 327330,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000750 327331,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000751 327332,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000752 327333,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000753 327334,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000754 327335,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000755 327336,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000756 327337,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000757 327338,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
Z000758 327339,	-	BL 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
26137 KISH, JOHN	-	OT 30-SEP-93	LM	90009	13-OCT-93	LEISHMANIA JW 11/12	+	+	RE	
Z000740 327321,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA JW 11/12	-	-	NR	REP. PLATE
Z000741 327322,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA JW 11/12	+	+	RE	REP. PLATE, NEG CONT.

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PCR Assay Results: LM  
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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube #	Tube #	Int	Comments
Z000742	327323,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	+	+	RE	REP. PLATE, NEG. CONT.
Z000743	327324,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	+	+	RE	REP. PLATE, NEG. CONT.
Z000744	327325,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000745	327326,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000746	327327,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000747	327328,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000748	327329,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000749	327330,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000750	327331,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	+	-	IND	REP. PLATE
Z000751	327332,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000752	327333,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000753	327334,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000754	327335,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000755	327336,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000756	327337,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000757	327338,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
Z000758	327339,	-	BL 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	REP. PLATE
26137	KISH, JOHN	-	OT 30-SEP-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	PLATE
26305	VAUGHAN, GEORGE	20-543-62-6961	BL 08-OCT-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	PLATE
26306	VAUGHAN, GEORGE	20-543-62-6961	BM 08-OCT-93	LM	90009	15-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	PLATE
Z000720	32731,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	2X.VOL
Z000721	32732,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	2X.VOL
Z000722	32733,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	2X.VOL

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PCR Assay Results: LM  
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Spec ID Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube Tube # 1 # 2	Int	Comments
Z000723 32734,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000724 32735,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000725 32736,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000726 32737,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000727 32738,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000728 32739,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000729 327310,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000730 327311,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000731 327312,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000732 327313,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000733 327314,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000734 327315,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000735 327316,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000736 327317,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000737 327318,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000738 327319,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000739 327320,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000740 327321,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000741 327322,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000742 327323,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000743 327324,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000744 327325,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL
Z000745 327326,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	NR	2X.VOL

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PCR Assay Results: LM  
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Spec ID Patient Name	PFC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube # 1	Tube # 2	Int	Comments
Z000746 327327,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	2X VOL
Z000747 327328,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	2X VOL
Z000720 32731,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000721 32732,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000722 32733,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000723 32734,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000724 32735,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000725 32736,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000726 32737,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000727 32738,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000728 32739,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000729 327310,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000730 327311,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000731 327312,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000732 327313,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000733 327314,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000734 327315,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000735 327316,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000736 327317,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000737 327318,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000738 327319,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000739 327320,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1
Z000740 327321,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA JW 11/12	-	-	NR	JW11-3, JW12-1

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PCR Assay Results: LM  
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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube #	Tube #	Int	Comments
Z000741	327322,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	JW11-3, JW12-1
Z000742	327323,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	JW11-3, JW12-1
Z000743	327324,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	JW11-3, JW12-1
Z000744	327325,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	JW11-3, JW12-1
Z000745	327326,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	JW11-3, JW12-1
Z000746	327327,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	JW11-3, JW12-1
Z000747	327328,	-	BL 30-SEP-93	LM	90009	21-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	JW11-3, JW12-1
Z000692	328710,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	JW11-3, JW12-1
Z000693	328711,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000694	328712,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000695	32871,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000696	32872,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000697	32873,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000698	32874,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000699	32875,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000704	32876,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000705	32877,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000706	32878,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000707	32879,	-	BL 14-OCT-93	LM	90009	22-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000708	BACHMAN, JOHN	20-205-42-4875	TC 20-OCT-93	LM	90009	29-OCT-93	LEISHMANIA	JW 11/12	+	+	RE	
Z000709	VAUGHAN, GEORGE	20-543-62-6961	BL 21-OCT-93	LM	90009	29-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000710	VAUGHAN, GEORGE	20-543-62-6961	BM 21-OCT-93	LM	90009	29-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000711	VAUGHAN, GEORGE	20-543-62-6961	BM 21-OCT-93	LM	90009	29-OCT-93	LEISHMANIA	JW 11/12	-	-	NR	

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PCR Assay Results: LM  
Probe JW 14

Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel Assay Date	Virus	Primer	Tube #	Tube	Int	Comments
								1	2		
26642	54F,	-	BL 25-OCT-93	LM	90009	29-OCT-93	LEISHMANIA JW 11/12	+	+	RE	
26643	65F,	-	BL 25-OCT-93	LM	90009	29-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
26644	71F,	-	BL 25-OCT-93	LM	90009	29-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
26645	72F,	-	BL 25-OCT-93	LM	90009	29-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
26646	73/74F,	-	BL 25-OCT-93	LM	90009	29-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
26647	77F,	-	BL 25-OCT-93	LM	90009	29-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
26648	102F,	-	BL 25-OCT-93	LM	90009	29-OCT-93	LEISHMANIA JW 11/12	-	-	NR	
26716	VAUGHAN, GEORGE	20-543-62-6961	OT 27-OCT-93	LM	90009	08-NOV-93	LEISHMANIA JW 11/12	-	-	NR	INSUFF. CELLS
2000712	VAUGHAN, GEORGE	20-543-62-6961	LI 01-NOV-93	LM	90009	08-NOV-93	LEISHMANIA JW 11/12	-	-	NR	
26879	NERONE, MARCUS A	20-257-17-3841	BL 03-NOV-93	LM	90009	08-NOV-93	LEISHMANIA JW 11/12	-	-	NR	
26880	NERONE, MARCUS A	20-257-17-3841	BM 03-NOV-93	LM	90009	08-NOV-93	LEISHMANIA JW 11/12	-	-	NR	
2000714	BRANDES, RONALD	20-317-48-7871	TC 17-NOV-93	LM	90009	22-NOV-93	LEISHMANIA JW 11/12	-	-	NR	
2000715	ELLIOTT, E	-	TC 17-NOV-93	LM	90009	22-NOV-93	LEISHMANIA JW 11/12	-	-	NR	
2000716	ELLIOTT, E	-	TC 17-NOV-93	LM	90009	22-NOV-93	LEISHMANIA JW 11/12	-	-	NR	
27156	BRANDES, RONALD	20-317-48-7871	BL 17-NOV-93	LM	90009	22-NOV-93	LEISHMANIA JW 11/12	-	-	NR	
27165	VAUGHAN, GEORGE	20-543-62-6961	TC 18-NOV-93	LM	90009	22-NOV-93	LEISHMANIA JW 11/12	-	-	NR	
27166	NERONE, MARCUS A	20-257-17-3841	BL 18-NOV-93	LM	90009	22-NOV-93	LEISHMANIA JW 11/12	-	-	NR	
2000714	BRANDES, RONALD	20-317-48-7871	TC 17-NOV-93	LM	90009	24-NOV-93	LEISHMANIA JW 11/12	-	-	NR	PL1
2000715	ELLIOTT, E	-	TC 17-NOV-93	LM	90009	24-NOV-93	LEISHMANIA JW 11/12	-	-	NR	PL1
2000716	ELLIOTT, E	-	TC 17-NOV-93	LM	90009	24-NOV-93	LEISHMANIA JW 11/12	+	-	IND	PL1
27165	VAUGHAN, GEORGE	20-543-62-6961	TC 18-NOV-93	LM	90009	24-NOV-93	LEISHMANIA JW 11/12	+	-	IND	PL1, -CONT
27166	NERONE, MARCUS A	20-257-17-3841	BL 18-NOV-93	LM	90009	24-NOV-93	LEISHMANIA JW 11/12	-	-	NR	PL1, -CONT
2000714	BRANDES, RONALD	20-317-48-7871	TC 17-NOV-93	LM	90009	29-NOV-93	LEISHMANIA JW 11/12	-	-	NR	PL2



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PCR Assay Results: LM  
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Spec ID	Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube #	Tube #	Int	Comments
Z000715	ELLIOTT, E	-	TC 17-NOV-93	LM	90009	29-NOV-93	LEISHMANIA	JW 11/12	-	-	NR	PL2
Z000716	ELLIOTT, E	-	TC 17-NOV-93	LM	90009	29-NOV-93	LEISHMANIA	JW 11/12	-	-	NR	PL2
27165	VAUGHAN, GEORGE	20-543-62-6961	TC 18-NOV-93	LM	90009	29-NOV-93	LEISHMANIA	JW 11/12	-	-	NR	PL2
27166	NERONE, MARCUS A	20-257-17-3841	BL 18-NOV-93	LM	90009	29-NOV-93	LEISHMANIA	JW 11/12	-	-	NR	PL2
Z000714	BRANDES, RONALD	20-317-48-7871	TC 17-NOV-93	LM	90009	29-NOV-93	LEISHMANIA	JW 11/12	-	-	NR	PL3
Z000715	ELLIOTT, E	-	TC 17-NOV-93	LM	90009	29-NOV-93	LEISHMANIA	JW 11/12	+/-	+	IND	PL3
Z000716	ELLIOTT, E	-	TC 17-NOV-93	LM	90009	29-NOV-93	LEISHMANIA	JW 11/12	-	-	NR	PL3
27165	VAUGHAN, GEORGE	20-543-62-6961	TC 18-NOV-93	LM	90009	29-NOV-93	LEISHMANIA	JW 11/12	-	-	NR	PL3
27166	NERONE, MARCUS A	20-257-17-3841	BL 18-NOV-93	LM	90009	29-NOV-93	LEISHMANIA	JW 11/12	-	+	IND	PL3
Z000766	BRANDES, RONALD	20-317-48-7871	LM 23-NOV-93	LM	90009	02-DEC-93	LEISHMANIA	JW 11/12	-	-	NR	PL3
Z000767	BRANDES, RONALD	20-317-48-7871	LI 23-NOV-93	LM	90009	02-DEC-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000768	BRANDES, RONALD	20-317-48-7871	TC 23-NOV-93	LM	90009	02-DEC-93	LEISHMANIA	JW 11/12	-	-	NR	
Z000769	BRANDES, RONALD	20-317-48-7871	TC 23-NOV-93	LM	90009	02-DEC-93	LEISHMANIA	JW 11/12	-	-	NR	
27882	HAYES, JAMES	-380-80-7107	BL 21-JAN-94	LM	90009	13-JAN-94	LEISHMANIA	JW 11/12	-	-	NR	
27883	HAYES, JAMES	-380-80-7107	BM 21-JAN-94	LM	90009	13-JAN-94	LEISHMANIA	JW 11/12	-	-	NR	
Z000771	40211,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR	
Z000772	40212,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR	
Z000773	40213,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR	
Z000774	40214,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR	
Z000775	40215,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR	
Z000776	40216,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR	
Z000777	40217,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR	
Z000778	40218,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR	

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PCR Assay Results: LM  
Probe JW 14

Spec ID Patient Name	FPC + SSN	Spec Received Type Date	Study	Panel	Assay Date	Virus	Primer	Tube Tube # 1 # 2	Int	Comments
Z000779 40219,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR
Z000780 402110,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR
Z000781 402111,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR
Z000782 402112,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR
Z000783 402113,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR
Z000784 402114,	-	BL 21-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR
Z000785 ZUPEC, JEFFREY	-	BL 24-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR
Z000786 ZUPEC, JEFFREY	-	BL 24-JAN-94	LM	90009	26-JAN-94	LEISHMANIA	JW 11/12	-	-	NR
Z000787 HALLMAN, JAMES	-419-62-6827	LI 25-JAN-94	LM	90009	27-JAN-94	LEISHMANIA	JW 11/12	-	-	NR

Interpretation Key   Specimen Type			
RE = Reactive	BL = Blood	LN = Lymphnode	
NR = Non-Reactive	SK = Skin	BM = Bone Marrow	
ND = Non-Diagnostic	LI = Liver	ASP = Aspirate	
	CO = Colon		

**Appendix II. Manuscript submitted for publication**

Nuzum, E., White III, F., Thakur, C., Dietze, R., Wages, J.,  
Grogl, M. and Berman, J. 1994. Diagnosis of visceral  
leishmaniasis from patient blood using the polymerase chain  
reaction. (Submitted to Journal of Infectious Diseases)

FOR: DR. SURYANARAYANA

SRA Technologies

## TITLE:

Diagnosis of visceral leishmaniasis from patient blood using the  
polymerase chain reaction

Fax: 301-424-8501

## RUNNING TITLE:

Leishmania PCR

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**ABSTRACT**

To diagnose visceral leishmaniasis (kala-azar) using peripheral blood rather than tissue aspirates, a PCR technique was developed for which the detection limit is one Leishmania-infected macrophage in 8 mls blood. For Indian, Kenyan, or Brazilian patients with parasitologically proven kala-azar, 57 of 63 cases prior to treatment had blood that was PCR positive (90% sensitivity). None of 40 uninfected persons had PCR positive blood (100% specificity). 12 of 13 Indian patients successfully treated had negative PCR reactions on their blood 1-6 months post treatment (92%). This PCR procedure is capable of parasitologically diagnosing the vast majority of kala-azar cases pre-therapy, may identify patients who have been successfully treated by chemotherapy, and should substantially obviate the need for invasive tests to diagnose kala-azar.

## INTRODUCTION

Visceral leishmaniasis (kala-azar), infection of the liver, spleen, and bone marrow with the Leishmania donovani complex, is a significant parasitic problem in the developing world and, with increased international travel and AIDS, in the developed world [1,2]. The diagnosis of visceral leishmaniasis requires parasitological identification of Leishmania from lesion material. The ability to diagnose visceral leishmaniasis from easily obtained material such as patients' blood would be a major advance. Because of our interest in diagnosing visceralizing Leishmania (tropica) infection in Operation Desert Storm personnel, we devised a polymerase chain reaction (PCR) method to diagnose Leishmania in patients' blood, using L. tropica minicircle kDNA as the basis for the PCR primers. We validated the test with blood from patients with the most prevalent clinical presentation of visceralizing Leishmania, kala-azar.

## MATERIALS AND METHODS

### PCR primers

20 different PCR primer pairs based on extensive literature [3-9] and DNA sequence database searches of Leishmania minicircle kDNA were synthesized (Synthetic Genetics, San Diego, CA). The primers finally chosen for systematic evaluation were designated JW-11-i and JW-12-i, which were 5' biotinylated to facilitate PCR product capture and analysis. JW-14 was the detection probe, 5' coupled to Horseradish Peroxidase (HRP). "I" = deoxyinosine.

5' primer JW-11-i: 5'-CCTATTTTACACCAACCCCIAGTTT-3'

3' primer JW-12-i: 5'-CGGGTAGGGGCGTTCTGCGAAAT-3'

probe JW-14: 5'-ATTGAACGGGGTTTCTGTATGCATTTTTCGAA-3'

### Sample collection and preparation

Peripheral blood was collected in LeucoPREP™ (Becton-Dickinson, Rutherford, NJ) vacutainer tubes that contained a gel matrix, and within 6 hrs spun at 1500-1800 x g for 20 minutes. The suspension of peripheral blood mononuclear cells (PBMC) above the matrix was removed, exposed to 0.1% saponin in 0.6% NaCl to lyse contaminating red cells, centrifuged (300 x g for 15 min), and then resuspended at a concentration of 3 x 10<sup>7</sup> PBMCs/ml in lysis buffer (50 mM KCl, 10 mM Tris-HCl, pH 8.3, 2.5 mM MgCl<sub>2</sub>, 0.45% NP-40, 0.45% Tween 20, 240 ug/ml proteinase k) at 55°C for 1 hr and then at 95°C for 15 min to lyse the mononuclear cells.

### PCR amplification

For each sample assayed, 40 µl of lower PCR mix containing 10X PCR buffer (Promega, Madison, WI), MgCl<sub>2</sub>, primers, dNTP's, and 0.1 Unit UNG (uracil-N-glycosylase, Epicentre Technologies, Madison, WI) was added to each tube. A single AmpliWax™ bead (Perkin Elmer, Norwalk, CT) was placed in each tube, and the tubes were heated to approximately 70°C for five



minutes to melt the wax bead. After cooling to room temperature, 10  $\mu$ l of upper PCR mix containing 10X PCR buffer, 0.1 Unit UNG, and AmpliTaq™ DNA polymerase (Perkin Elmer, Norwalk, CT) was added. Fifty  $\mu$ l of lysed mononuclear cells, representing an original peripheral blood volume containing  $1.5 \times 10^6$  PBMCs, was then added. The final reaction volume of 100  $\mu$ l contained 1X PCR buffer (10mM Tris-HCl, pH 8.3, 50 mM KCl), 2.5 mM  $MgCl_2$ , 1.0  $\mu$ M each primer, 200  $\mu$ M of each dATP, dCTP, and dGTP (U.S. Biochemicals, Cleveland, OH), 300  $\mu$ M dUTP (Epicentre Technologies, Madison, WI), 2.5-5.0 Units AmpliTaq™ DNA polymerase, and 0.2 Unit UNG. Reactions were cycled in a Perkin Elmer model 9600 thermal cycler using the following conditions; 94°C for 5'0", 10 cycles of 97°C for 0'15", 55°C for 1'0", 72°C for 1'0", followed by 30 cycles of 92°C for 0'15", 55°C for 1'0", and 72°C for 1'0". PCR products were held at 72°C or frozen at -20°C until assayed.

#### PCR product analysis

Reaction products were detected by affinity-based hybridization analysis developed by SRA Technologies using the oligonucleotide probe (JW-14) to sequences bracketed by, but not overlapping, the primers [10,11]. Assay plates (Immulon 4, Dynatech Labs, Chantilly, VA) were coated with 100  $\mu$ l of 100  $\mu$ g/ml avidin D (Vector Labs, Burlingame, CA) in coating buffer (50 mM Sodium Bicarbonate pH 9.5, 150 mM NaCl, 0.01% Sodium Azide) per well. Ten  $\mu$ l from each PCR reaction containing biotinylated product DNA was heat-denatured for 5 minutes at 95°C, then transferred to an avidin-coated well containing hybridization solution (5X SSC, 5X Denhardt's, 0.5% SDS, 2% BSA, 50  $\mu$ g sheared salmon sperm DNA) and 1 pmol per well of HRP-coupled probe JW14 (Synthetic Genetics, San Diego CA). The reaction mixtures were incubated at 42°C for 20 minutes to allow simultaneous hybridization of the probe to the PCR product and binding of the biotinylated PCR product to the solid substrate. After the solution was discarded, each well was washed 4 times using an automatic microtiter plate washer. A substrate solution of 0.6 mg/ml o-phenylene-diamine dihydrochloride (OPD:

Sigma, St. Louis, MO) in citrate/phosphate buffer, pH 5.5, containing  $\text{H}_2\text{O}_2$  was then added. The reaction was incubated at room temperature for 10 minutes, stopped by the addition of 1N  $\text{H}_2\text{SO}_4$  and read at 490nm in a Molecular Devices UVmax microplate reader.

Background in the assay is typically less than 0.06  $\text{OD}_{490}$ , with a positive signal generally 0.700  $\text{OD}_{490}$  or greater. All samples were tested in duplicate reactions with a negative control (all PCR reagents but no DNA). Since 10-20 samples (with 2 experimental and one negative control reaction per sample) were analyzed on each 96-well plate, the mean and standard deviation (SD) for negative control values could be calculated from the 10-20 negative control reactions for each 96-well plate. A sample was defined as positive if the  $\text{OD}_{490}$  of both experimental reactions was greater than or equal to the mean  $\text{OD}_{490}$  of the negative controls for that plate plus three SD.

## Determination of sensitivity and specificity using laboratory samples

In preliminary work, we found that the DNA equivalence of one promastigote of L. donovani and L. chagasi, as well as of L. tropica (the species for which the primers were originally designed), was detected by this PCR method. When clinical specimens were simulated by infecting the PBMCs of normal volunteers with Leishmania amastigotes, 10 and 5 L. tropica-infected macrophages in 8 ml blood were detected each of 4 times, 1 infected macrophage was detected 3 of 4 times, and uninfected macrophages gave no PCR signal on each of

L. tropica-infected macrophages in 8 ml blood were detected each of 4 times, 1 infected simulated by infecting the PBMCs of normal volunteers with Leishmania amastigotes, 10 and 5

simulated by infecting the PBMCs of normal volunteers with Leishmania amastigotes, 10 and 5 L. tropica-infected macrophages in 8 ml blood were detected each of 4 times, 1 infected macrophage was detected 3 of 4 times, and uninfected macrophages gave no PCR signal on each of 8 occasions. The absence of PCR product when DNA from >10,000 organisms of other genera (Trypanosoma, Toxoplasma, Plasmodia, Pneumocystis, Histoplasma, Mycobacterium, or Salmonella) were used indicates that this PCR technique is 100% biologically specific.

## Clinical data

To determine if this PCR technique could be used to diagnose kala-azar, blood was drawn from 75 Indians, 11 Kenyans, and 10 Brazilians with disease proven by visualization of Leishmania amastigotes in splenic aspirates (Kenyan and Indian patients) or in bone marrow aspirates (Brazilian patients). Blood was also drawn from 5 Indians, 7 Kenyans, 1 Brazilian, and 27 Americans who were not suspected to be infected with Leishmania.

A majority of specimens were drawn pre-therapy (Table 1). Approximately 90% of these were positive for Leishmania kDNA. The percent of PCR-positive samples for the different endemic areas was 80% for Brazil, 90% from India, and 100% from Kenya. There were 11 patients for whom blood was drawn on each of two consecutive days. There was complete

concordance between the duplicate specimens. 3 patients had blood that was PCR positive in both

instances, and 2 patients had blood that was PCR negative in both instances.

There was no correlation between PCR results and the important clinical parameter of spleen size. For the two false-negative Brazilian samples, the patients' spleen sizes were 6 and

7 cm below the right costal margin. For the 5 PCR-positive samples in that group, the patients' spleen sizes ranged from 4 to 13 cm (mean = 8.6 cm). The second batch of Indian kala-azar samples contained 3 samples of blood that were negative by PCR. The spleen sizes for these patients ranged from 5 to 11 cm (mean = 8.7 cm). For the 12 PCR-positive samples in that batch, the mean patient spleen size was 6.4 cm.

There were 33 Indian patients for whom blood was drawn during or after therapy (Table 1). These patients were treated either with the classic agent sodium stibogluconate @20 mg/kg/day for 40 days [12] or amphotericin B @1 mg/kg every-other-day for 20 injections [13]. For patients in the first half of therapy, blood was PCR positive in approximately 90% of cases, nearly the same percent as for patients whose blood was taken before therapy. For patients in the second half of therapy, blood was positive in only 37%. In addition, there were 13 patients in whom drug treatment had apparently been successful by clinical criteria (loss of fever, weight gain, decrease in spleen size). By 1-6 months after the end of therapy, blood was positive in 14% to 0% of cases, respectively.

The blood of all 40 healthy volunteers was Leishmania kDNA negative by PCR.

## DISCUSSION

We were able to diagnose 90% of cases of parasitologically proven kala-azar by PCR on the patients' peripheral blood. The cases came from the 3 major endemic areas of the world--India, Africa, and Brazil. Since PCR was positive for laboratory samples in which merely one infected macrophage was spiked into 8 mls of blood, the 10% PCR negative samples are thought to be due to biologic false-negativity (the organisms were present in infected organs but were not in the peripheral circulation) rather than to technical false negativity (the organisms were in the blood but were undetected by PCR). Clinical parameters did not differentiate the 90% of patients whose blood was PCR positive from the 10% of patients whose blood was PCR negative, and no patient who was PCR negative in one sample was PCR positive on subsequent samples taken a few days later. We conclude that when blood samples are drawn over a period of a few days, infected macrophages enter the peripheral circulation from diseased organs in 90% but not 100% of patients.

These results represent a substantial clinical advance compared to previous reports on diagnosis of visceral leishmaniasis via PCR. For example, for 7 Indian kala-azar patients prior to treatment for whom the blood was analyzed by another PCR technique, 3 PCR reactions were negative, 2 were positive, one was faintly positive, and one was positive via an alternative detection band [8].

The PCR procedure described herein has potential applicability for the clinical management of kala-azar cases. The 100% specificity indicates that if the blood of a patient suspected of having kala-azar is PCR positive, that patient would not have to undergo invasive organ biopsy for a parasitological diagnosis. The 90% sensitivity indicates that the vast majority of patients with kala-azar will be diagnosed via this technique. For example, it is reasonable to assume clinical judgement is sufficiently accurate so that half of clinically suspected cases are eventually proven to have kala-azar. For every 100 suspected cases, of whom 50 would actually have kala-azar, 45 cases (90%) should be diagnosed on the basis of

blood PCR. Invasive diagnostic tests would only have to be performed on the remaining 55 PCR negative persons to distinguish the 50 who are uninfected from the 5 who would have biological false negative PCR results.

Post therapy, 1 of 13 patients clinically cured of kala-azar was PCR positive in our study, and this patient had blood drawn only 1 month after the end of therapy. The low percent of PCR positivity post therapy suggests that further study of successfully treated kala-azar patients may reveal a time post-therapy when virtually all cases are PCR negative. This PCR technique therefore has the potential to obviate invasive parasitological tests both prior to and post therapy.

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**TABLE 1: POLYMERASE CHAIN REACTION RESULTS FOR KALA AZAR PATIENTS**

Table depicts countries from which batches of patient samples were obtained, time in relation to treatment that blood for PCR was obtained [Pretreatment (pre-RX); in the first half of treatment (< 0.5 RX); in the second half of treatment (0.5-1.0 RX); or 1, 2, or 6 months after treatment] and PCR results (+ or -). The total number of PCR+ and PCR- results for each country and for all countries are also shown.

**POLYMERASE CHAIN REACTION RESULTS (+ OR -) FOR EACH PATIENT  
AT THE FOLLOWING TIMES WITH RESPECT TO THERAPY**

<b>COUNTRY/ BATCH #</b>	<b>PFE RX</b>	<b>&lt; 0.5 RX</b>	<b>0.5--1.0 RX</b>	<b>1 MONTH POST RX</b>	<b>2 MONTH POST RX</b>	<b>6 MONTH POST RX</b>
<b>INDIA #1</b>						
positive	3	5	1	[none]	[none]	[none]
negative	0	0	2	[none]	[none]	[none]
<b>INDIA #2</b>						
positive	12	4	1	[none]	0	[none]
negative	3	0	0	[none]	1	[none]
<b>INDIA #3</b>						
positive	23	2	1	1	0	0
negative	1	1	5	6	3	2
<b>INDIA TOTAL</b>						
positive	38	11	3	1	0	0
negative	4	1	5	6	4	2
<b>KENYA TOTAL</b>						
positive	11					
negative	0					
<b>BRAZIL #1</b>						
positive	5					
negative	0					
<b>BRAZIL #2</b>						
positive	3					
negative	2					
<b>BRAZIL TOTAL</b>						
positive	8					
negative	2					
<b>TOTALS FOR ALL COUNTRIES</b>						
✓ positive	57	11	3	1	0	0
negative	6	1	5	6	4	2
% positive	90	92	37	14	0	0